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Report of State and Local Radiological Health Programs

FISCAL YEAR 1969

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Environmental Health Service

OFFICE OF REGIONAL OPERATIONS

List of Publications

The following publications (with the exception of the "Directory of Personnel Responsible for Radiological Health Programs") of the Office of Regional Operations, Bureau of Radiological Health, are available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Price is \$3.00 for paper copy and \$0.65 for microfiche. The PB number, if indicated for a report, should be cited when ordering.

Copies of the "Directory of Personnel Responsible for Radiological Health Programs" may be obtained by writing to the Office of Regional Operations, Bureau of Radiological Health, 5600 Fishers Lane, Rockville, Maryland 20852.

Title

ORO 69-1	Directory of Personnel Responsible for Radiological	
69-2	Health Programs, January and July 1969. (out of print)	
ORO 69-3	Report of State and Local Radiological Health Programs, Fiscal Year 1968	PB 188-262
ORO 69-4	Conference on Federal-State Implementation of Public Law 90-602, March 24-26, 1969, Montgomery, Alabama	PB 189-655
ORO 69-5	Radiation Sources in Secondary Schools. Report of a Limited Survey, 1969	PB 188-701
ORO 70-1	Directory of Personnel Responsible for Radiological Health Programs, February 1970 (out of print)	
ORO 70-2	State Radiation Control Legislation-1969	PB 193-154
ORO 70-3	Directory of Personnel Responsible for Radiological Health Programs, July 1970	
ORO 70-4	Report of State and Local Radiological Health Programs, Fiscal Year 1969	

Report of State and Local Radiological Health Programs

FISCAL YEAR 1969

M. A. Culliton

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Office of Regional Operations

JULY 1970

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Environmental Health Service
Bureau of Radiological Health
Rockville, Maryland 20852

FOREWORD

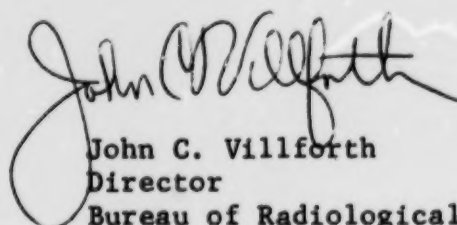
The Bureau of Radiological Health continues to carry out a national program designed to reduce man's exposure to ionizing and nonionizing radiation.

Within the Bureau, the Office of Regional Operations assists and advises the Bureau Director on regional and State radiological health activities. This office coordinates all radiological health activities for the active Federal-State partnership to achieve and maintain comprehensive radiological health control. The Office of Regional Operations also guides and directs the State participation in Public Law 90-602.

The Bureau publishes its findings in "Radiological Health Data and Reports" (a monthly publication), Public Health Service numbered reports, appropriate scientific journals, and technical report series for the Bureau's divisions, offices, and laboratories.

The technical reports of the Office of Regional Operations (ORO) allow comprehensive publishing of the results of intramural and contractor projects. The reports are distributed to State and local radiological health personnel, Bureau technical staff, Bureau advisory committee members, university radiation safety officers, libraries and information services, industry, hospitals, laboratories, schools, the press, and other interested individuals. These reports are also included in the collections of the Library of Congress and the Clearinghouse for Federal Scientific and Technical Information.

Your additional comments on these reports or requests for further information are encouraged.

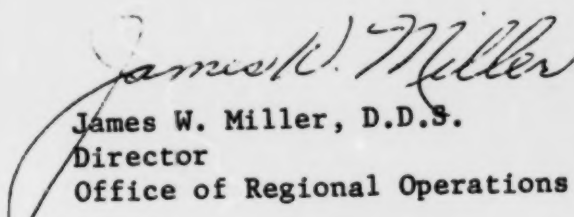

John C. Villforth
Director
Bureau of Radiological Health

PREFACE

The Bureau of Radiological Health has been established as the focal point for radiological health activities within the United States Public Health Service. The Bureau's Office of Regional Operations has been assigned the responsibility to disseminate technical information to States, review and compile Federal-State legislation, and assist State program development, maintenance, and expansion.

In order to provide guidance in achieving and maintaining comprehensive radiation control programs, data on resources and activities of State radiation control programs are collected and published annually. This report is the ninth in a series of such reports.

Our gratitude is extended to the State and local agencies for providing the basic data and to the Regional Radiological Health Representatives, Environmental Control Administration, for their invaluable assistance in collecting these data.


James W. Miller, D.D.S.

Director

Office of Regional Operations

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ABSTRACT

This report is the ninth of a series based on data collected during fiscal year reviews of 53 State and local radiological health programs. The resources and activities of State and local radiological health programs are presented and summarized from data collected as of June 30, 1969. Summary data are included for fiscal years 1964 through 1969.

Resources include data on personnel, funds, and equipment. The program activity areas are basic planning and administration, x-ray survey and control, environmental surveillance, radioactive materials, electronic products, and other radiological health activities.

1

**REPORT OF STATE AND LOCAL
RADIOLOGICAL HEALTH PROGRAMS
Fiscal Year 1969**

INTRODUCTION

This report is the ninth of a series based on data collected during fiscal year reviews of State and local radiological health programs. The reviews are a combined effort of radiological health personnel in State health agencies, several local agencies and the regional offices of the Department of Health, Education, and Welfare. The resources and activities of State and local radiological health programs are presented and summarized from data collected as of June 30, 1969. Summary data are included for fiscal years 1964 through 1969.

Some degree of variation from State to State in radiological health programs is apparent due to the number, types, and location of radiation sources, the density of the population, and the levels of actual or potential radiation exposure.

All data were recorded on the questionnaire reproduced in Appendix C. Resources for radiological health activities include personnel, funds, and equipment. Program activity areas are defined as: (1) basic planning and administration, (2) x-ray survey and control, (3) environmental surveillance, (4) radioactive materials, (5) electronic products, (6) other radiological health activities. Data on electronic products were collected for the first time in fiscal year 1968. Whenever possible, program activities have been categorized by these areas of activity to show the specific accomplishments during each of the last six fiscal years.

For the purpose of this report, Puerto Rico, the District of Columbia, and the Virgin Islands are counted as States. Fiscal year 1969 data were not available from Iowa as of the publication of this report; therefore, Iowa has been excluded from most tables.

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RADIATION CONTROL LEGISLATION

Since 1951, a total of 46 States and the Commonwealth of Puerto Rico have enacted specific laws for the regulation of ionizing radiation (table 1). Some of these laws are restricted to certain occupations or are amendments to existing statutes. In Iowa, Michigan, Rhode Island, West Virginia, and the District of Columbia, the responsibility for some aspects of radiation protection is assumed under general public health laws. The technical details of regulatory control are generally not included in these enabling acts; rather this authority is delegated to State agencies.

Licenses are issued in 22 States which have entered into an agreement with the Atomic Energy Commission for regulating specific material previously under Atomic Energy Commission control (table 2).

In recent years, seven States have approved legislation for the regulation of all sources of ionizing and nonionizing (electromagnetic) electronic product radiation, and three States have specific legislation for the registration of laser devices (table 3). Four States and the Commonwealth of Puerto Rico have approved specific laws controlling the use of ionizing radiation on human beings (table 4).

Table 1. - Enabling Acts for Radiation Protection Regulations by State,
as of June 1, 1970

State	Act/Year	Effective Date of Act	Responsible Agency or Remarks ^a
Alabama	Act 582/63	9/16/63	Ariz. Atomic Energy Com.
Alaska	Chapter 66/57	3/18/57	
Arizona	Chapter 30/64	7/15/64	
Arkansas	Act 8/61	12/20/61	
California	Chapter 1711/61	7/1/62	
Colorado	Chapter 156/57; S.B. 231/65; as amended by S.B. 108; as amended by S.B. 1	3/13/57; 4/23/65 6/1/67; 7/1/68	La. Board of Nuclear Energy
Connecticut	Public Act 550/67	6/20/67	
Delaware	Chapter 74	4/26/68	
Florida	Chapter 290/61	2/21/62	
Georgia	Act 936/64; as amended by H.B. 864; as amended by H.B. 1586	7/1/64; 4/3/68 4/8/68	
Hawaii	Chapter 18/51	5/2/51	Massachusetts Department of Labor and Industries
Idaho	Chapter 243/61	5/2/61	
Illinois	S.B. 515/59; as amended by S.B. 756/63	8/16/63	
Indiana	Chapter 77/59; as amended by Chapter 116/61	3/4/61	
Kansas	Chapter 290/63	7/1/63	
Kentucky	Section 152.120(1A), 152.125, and 152.190, Ky. Rev. Stat.; as amended by S.B. 284/60	3/25/60 8/1/62; 7/31/68	Massachusetts Department of Labor and Industries
Louisiana	Act 84/62; as amended by H.B. 1165	3/2/62	
Maine	Chapter 403/61	6/1/60	
Maryland	Article 43; as amended by Chapter 88/60; as amended by S.B. 93	6/1/68 11/28/60; 6/12/61	
Massachusetts	Chapter 633/60, Chapter 224/61; S.B. 1148	10/9/68	
Minnesota	Chapter 361/57	4/11/57	N.D. Water Conserv. Comm.
Mississippi	H.B. 499/64	4/24/64	
Missouri	S.B. 322/63	10/13/63	
Montana	H.B. 245/67	7/1/67	
Nebraska	L.B. 19/63	10/19/63	
Nevada	A.B. 495/63	7/1/63	Registration Statute
New Hampshire	H.B. 597/63	7/2/63	
New Jersey	Chapter 116/58	7/8/58	
New Mexico	Chapter 185/59	6/12/59	
New York	Section 201 and 255, P.H. Law, as amended by Chapter 628/60, and S.B. 4570/66	4/18/60; 5/23/66	
North Carolina	Chapter 104-C, General Statute, as amended by H.B. 34/63	6/26/63	Registration Statute
North Dakota	S.B. 202/65; Chapter 446/65	7/1/65; 7/1/65	
Ohio	H.B. 410/59	11/4/59	
Oklahoma	S.B. 26/63; as amended by H.B. 678/63; H.B. 1020	7/1/63; 6/18/63 4/22/68	
Oregon	Chapter 664/61	8/9/61	
Pennsylvania	Act 578/65; as amended by S.B. 320	1/28/66; 9/30/68	Registration Statute
Puerto Rico	Act 79/65; as amended by H.B. 462	7/1/65; 3/26/67	
South Carolina	Act 302/67	5/1/67	
South Dakota	S.B. 162/67	7/1/67	
Tennessee	Chapter 66/59	7/1/59	
Texas	Chapter 72/61	4/17/61	Registration Statute
Utah	H.B. 137/67	5/9/67	
Vermont	H.B. 59/67	7/1/67	
Virginia	Chapter 158/64; Chapter 314/68	3/3/67; 6/28/68	
Washington	Chapter 207/61; as amended by S.B. 15/65	6/30/61; 8/6/65	
Wisconsin	Chapter 325/63, as amended by Chapter 459/63	9/25/63; 1/4/64	Registration Statute
Wyoming	Chapter 153/55	2/19/55	

^aUnless otherwise specified, statutes designate the State health department as the agency responsible for radiation protection with the authority to adopt regulations.

Table 2. - Permissive State Statutes for Federal-State Agreement of
Certain Atomic Energy Commission-controlled Radioactive Materials,
as of June 1, 1970

State	Act/Year	Effective Date of Act	Effective Date of Agreement
Alabama	Act 582/63	September 16, 1963	October 1, 1966
Alaska	(a)		
Arizona	Chapter 30/64	July 15, 1964	May 15, 1967
Arkansas	Act 8/61	December 20, 1961	July 1, 1963
California	Chapter 18/62	July 13, 1962	September 1, 1962
Colorado	S.B. 231/65	April 23, 1965	February 1, 1968
Connecticut	Public Act 550/67	June 26, 1967	
Delaware	Title 16, Chapter 74	April 26, 1968	
Florida	H.B. 2367/61	June 16, 1961	July 1, 1964
Georgia	Act 936/64	July 1, 1964	December 15, 1969
Hawaii	S.B. 63/67	February 28, 1967	
Idaho	S.B. 64/61	May 2, 1961	October 1, 1968
Illinois	S.B. 756/63	August 16, 1963	
Indiana	Chapter 116/61	March 4, 1961	
Kansas	Chapter 290/63	July 1, 1963	January 1, 1965
Kentucky	S.B. 284/60	March 25, 1960	March 26, 1962
Louisiana	Act 84/62	August 1, 1962	May 1, 1967
Maine	Chapter 403/61	March 2, 1962	
Maryland	Chapter 52/62	June 1, 1962	
Michigan	Public Act 54/65	June 18, 1965	
Mississippi	(a)		July 1, 1962
Montana	Chapter 108/67	July 1, 1967	
Nebraska	L.B. 19/63	October 19, 1963	October 1, 1966
Nevada	A.B. 495/63	July 1, 1963	
New Hampshire	H.B. 597/63	July 2, 1963	May 16, 1966
New Jersey	Chapter 124/61	December 4, 1961	
New Mexico	(a)		
New York	Chapter 314/60	March 29, 1960	October 15, 1962
North Carolina	S.B. 530/63	June 26, 1963	August 1, 1964
North Dakota	S.B. 202/65	July 1, 1965	September 1, 1969
Ohio	H.B. 10/63	September 24, 1963	
Oklahoma	H.B. 678/63	June 18, 1963	
Oregon	Chapter 664/61	August 9, 1961	July 1, 1965
Pennsylvania	S.B. 295/65	January 28, 1966	
Puerto Rico	Act 79/65	July 1, 1965	
Rhode Island	S.B. 562/64	May 9, 1964	
South Carolina	Act 302/67	May 1, 1967	September 15, 1969
South Dakota	S.B. 162/67	July 1, 1967	
Tennessee	Chapter 10/61	January 30, 1961	September 1, 1965
Texas	Chapter 72/61	April 17, 1961	March 1, 1963
Utah	H.B. 137/67	May 9, 1967	
Vermont	H.B. 59/67	July 1, 1967	
Virginia	Chapter 158/64	March 3, 1964	
Washington	Chapter 207/61 as amended by S.B. 15/65	March 20, 1961 August 6, 1965	
Wisconsin	Chapter 264/63	August 25, 1963	December 31, 1966

*Attorney General has ruled additional State laws are not necessary to conclude agreements.

Table 3. - States with Specific Statutes for Control of Nonionizing Radiation, as of June 1, 1970

State	All Electromagnetic Radiation	Lasers only	Effective Date of Act
Alaska	H.B. 267		7/26/69
Arizona	H.B. 5		8/11/69
Arkansas	H.B. 328		8/7/69
Illinois		S.B. 984	8/11/67
Louisiana	H.B. 1165		7/31/68
Massachusetts		S.B. 1148	10/9/68
Mississippi	H.B. 499		^a 4/24/64
New York	H.B. 6393		4/27/69
Oklahoma	H.B. 1405		4/14/69
Pennsylvania		Act 436	9/1/68

^aAttorney General has ruled that the present Radiation Control Act provides authority to control nonionizing radiation.

Table 4. - States with Specific Statutes for Licensing of X-ray Technicians, as of June 1, 1970

State	Act	Bill	Effective Date
Arizona	Chapter 70	H.B. 5	8/11/70
California	Chapter 74	S.B. 1056	11/10/69
New Jersey	Chapter 291	A.B. 660	12/6/68
New York	Chapter 295	S.B. 1313	10/1/65
Puerto Rico	Act 78		9/23/63

RESOURCES

Expenditures

Total expenditures by State radiation control programs amounted to over \$7 million for fiscal year 1969. This total, \$7,049,900, represents a 4.4 percent decrease in spending over the previous fiscal year. State radiation control programs receive their funds through a direct appropriation or an allocation from an overall appropriation for several related types of health programs. Formula grant funds were available to the States beginning with fiscal year 1963 through fiscal year 1967. In 1968, State health agencies utilized Federal funds to support activities without categorical restrictions.

Until 1968, a steadily increasing amount was spent on radiological health activities, from \$5.34 million in 1964 to \$7.44 million in 1967 or an increase of 39 percent. In fiscal year 1968, the first year block grants were used, expenditures for radiological health were approximately the same as the previous fiscal year (figure 1).

In fiscal year 1969, there is a noticeable decrease in spending. Per capita expenditures ranged from less than one cent to nine cents among the 51 States reporting expenditures. The average per capita expenditure was 3.5 cents per State (table 5).

Figure 1. Total Expenditures^a for State and Local Radiological Health Activities, Fiscal Years 1964 to 1969

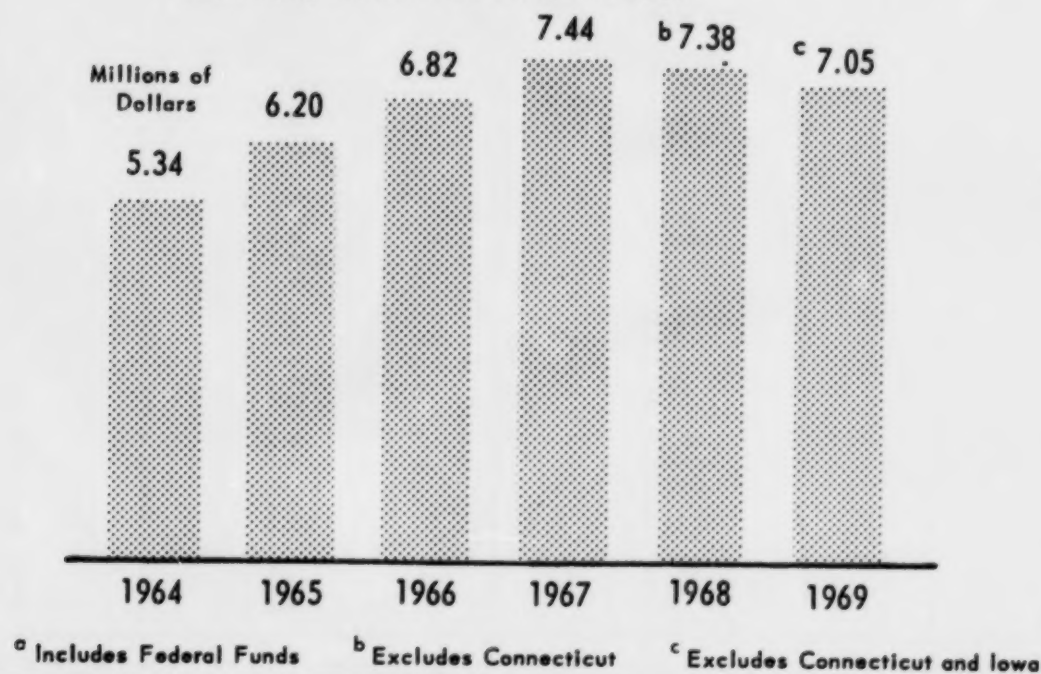


Table 5. - Total and Per Capita Expenditures for State and Local Radiological Health Activities by State, Fiscal Year 1969
(Includes Federal funds)

State	Population ^a 7/1/69 (In thousands)	Total Expenditures (In thousands)	Cents Per Capita
Total ^b	198,952.6	\$7,049.9	3.5
Alabama	3,531.0	157.1	4.4
Alaska	282.0	6.0	2.1
Arizona	1,693.0	63.0	3.7
Arkansas	1,995.0	^c 120.1	6.0
California	19,443.0	1,248.9	6.4
Colorado	2,100.0	94.2	4.5
Connecticut		(NA)	(NA)
Delaware	940.0	32.2	6.0
District of Columbia	798.0	71.6	9.0
Florida	6,354.0	127.1	2.0
Georgia	4,641.0	161.2	3.5
Hawaii	794.0	41.3	5.2
Idaho	718.0	32.6	4.5
Illinois	11,047.0	242.0	2.2
Indiana	5,118.0	70.5	1.4
Iowa ^d			
Kansas	2,321.0	94.7	4.1
Kentucky	3,232.0	108.6	3.4
Louisiana	3,745.0	161.3	4.3
Maine	978.0	31.9	3.3
Maryland	3,765.0	145.0	3.9
Massachusetts	5,467.0	190.0	3.5
Michigan	8,766.0	180.7	2.1
Minnesota	3,700.0	62.0	1.7
Mississippi	2,360.0	52.9	2.2
Missouri	4,651.0	94.2	2.0
Montana	694.0	3.8	.5
Nebraska	1,449.0	51.2	3.5
Nevada	457.0	4.0	.9
New Hampshire	717.0	33.5	4.7
New Jersey	7,148.0	254.1	3.6
New Mexico	994.0	35.4	3.6
New York	18,321.0	1,350.4	7.4
North Carolina	5,205.0	117.3	2.3
North Dakota	615.0	36.0	5.9
Ohio	10,740.0	149.9	1.4
Oklahoma	2,568.0	55.5	2.2
Oregon	2,032.0	96.9	4.8
Pennsylvania	11,803.0	249.4	2.1
Rhode Island	911.0	66.7	7.3
South Carolina	2,692.0	72.0	2.7
South Dakota	659.0	16.0	2.4
Tennessee	3,985.0	76.9	1.9
Texas	11,187.0	244.5	2.2
Utah	1,045.0	30.4	2.9
Vermont	439.0	39.8	9.1
Virginia	4,669.0	65.5	1.4
Washington	3,402.0	166.4	4.9
West Virginia	1,819.0	38.0	2.1
Wisconsin	4,233.0	112.0	2.6
Wyoming	320.0	27.6	8.6
Puerto Rico	^e 2,754.0	65.3	2.4
Virgin Islands	55.6	2.3	4.1

^aTotal resident population. ^bExcludes Connecticut and Iowa. ^cDoes not include additional funds used to operate the civil defense laboratory and maintain an emergency civil defense program. ^dNo report received. ^eAs of July 1, 1968.

In 1964, expenditures were concentrated in two major areas of activity--x-ray survey and control and environmental surveillance. This is still true in 1969, with 33.6 percent of the funds spent on x-ray survey and control and 21.4 percent on environmental surveillance. However, over the years, an increasing amount has been spent in the x-ray area, with funds decreasing for environmental surveillance activities (table 6).

In fact, expenditures in FY 1969 for environmental surveillance decreased by 14.4 percent over the previous year and 12.7 percent over FY 1964. This decrease in spending reflects the change in focus of the environmental surveillance program from surveillance of fallout resulting from atmospheric nuclear testing in the early 1960's to surveillance around nuclear reactors and other facilities located in the States. In the early 60's large expenditures were made to establish surveillance operations and acquire laboratory equipment.

The spending increase in x-ray survey and control (approximately 71 percent increase since 1964) represents efforts being made by State health departments to eliminate or reduce the unnecessary population and occupational exposure to ionizing radiation from dental and medical x-ray equipment.

As a result of new responsibilities and functions in the area of electronic products radiation (which culminated in the passage of the "Radiation Control for Health and Safety Act of 1968"), data were gathered for the first time in fiscal year 1968 on expenditures and

Figure 2. Total Expenditures^a for State and Local Radiological Health Activities by Program Area and Selected Fiscal Years

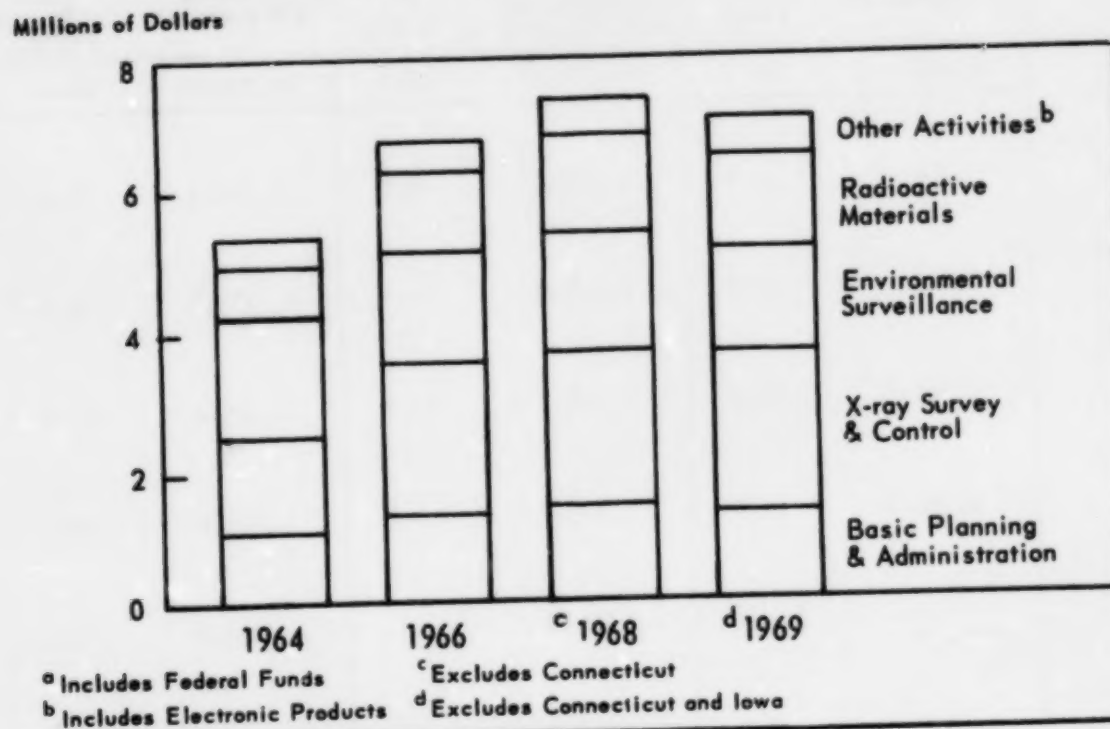


Table 6. - Total Expenditures for State and Local Radiological Health Activities by Program Area, Fiscal Years 1964 to 1969
(Includes Federal funds)

Program Area	Fiscal Year 1964		Fiscal Year 1965		Fiscal Year 1966	
	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total
Total	\$5,335.4	100.0	\$6,202.2	100.0	\$6,821.2	100.0
Basic Planning and Administration	1,051.0	19.7	1,036.8	16.7	1,283.2	18.8
X-ray Survey and Control	1,381.5	25.9	1,839.4	29.7	2,269.3	33.3
Environmental Surveillance	1,729.1	32.4	1,781.5	28.7	1,652.4	24.2
Radioactive Materials	761.5	14.3	1,067.5	17.2	1,133.4	16.6
Other Radiological Health Activities	412.3	7.7	477.0	7.7	482.9	7.1

Program Area	Fiscal Year 1967		Fiscal Year 1968		Fiscal Year 1969	
	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total
Total	\$7,442.1	100.0	^a \$7,375.1	100.0	\$7,049.9	100.0
Basic Planning and Administration	1,445.8	19.4	1,388.4	18.8	1,284.5	18.2
X-ray Survey and Control	2,364.3	31.8	2,278.7	30.9	2,365.4	33.6
Environmental Surveillance	1,860.5	25.0	1,763.2	23.9	1,509.0	21.4
Radioactive Materials	1,300.9	17.5	1,473.8	20.0	1,368.6	19.4
Electronic Products ^b			221.5	3.0	290.4	4.1
Other Radiological Health Activities	470.6	6.3	249.5	3.4	232.0	3.3

^aExcludes Connecticut. ^bExcludes Connecticut and Iowa. ^cData on this collected for the first time in fiscal year 1968. In previous, it was included in "other radiological health activities".

personnel in this area. Although funds for electronic products amounted to only four percent of total expenditures in fiscal year 1969, this category gained considerable momentum and increased 31.1 percent over the previous fiscal year.

Figure 2 shows the distribution of expenditures by program area for fiscal years 1964, 1966, 1968, and 1969. For distribution of 1969 funds by program area and State, see Appendix A, table 1.

On a regional basis (see Appendix B, Definitions) 31.5 percent of total State expenditures were made by States in the Northeast region of the country, with the western region showing a marked increase in expenditures as compared to 1968 (table 7).

The average expenditure for all States in 1969 was \$138,233 as compared with \$141,829 in FY 1968; \$128,702 in 1966; and \$100,668 in 1964.

Nineteen States spent \$100,000 or more for radiological health programs (table 8) as compared with 18 in 1968. Collectively, these 19 States spent an estimated \$5,486,000 in fiscal year 1969 or approximately 77.8 percent of the total expenditures for the nation. These 19 States represent 70.3 percent of the total resident population (Bureau of the Census July 1, 1969, provisional estimates of the total resident population). It should be noted that two States, California and New York, spent \$2,599,300 on radiation control programs, or 37 percent of total expenditures by the nation, whereas they account for 18.4 percent of the nation's population.

Table 7. - Total Expenditures^a for State and Local Radiological Health Activities by Geographic Region, Fiscal Years 1968 and 1969 (thousands of dollars)

Region	1968		1969	
	Expenditure	Percent	Expenditure	Percent
United States	^b \$7,375.1	100.0	^c \$7,049.9	100.0
Northeast	2,798.6	38.0	2,215.8	31.5
North Central	1,104.8	15.0	1,109.2	15.7
South	1,904.6	25.8	1,874.4	26.6
West	1,567.1	21.2	1,850.5	26.2

^aIncludes Federal funds.

^bExcludes Connecticut.

^cExcludes Connecticut and Iowa.

Table 8. - Distribution of the Number of States in Selected Expenditure Ranges for State and Local Radiological Health Activities, Fiscal Years 1964 to 1969 (thousands of dollars)
(Includes Federal funds)

Expenditure Range	FY 1964			FY 1965			FY 1966		
	Number of States	Expenditures		Number of States	Expenditures		Number of States	Expenditures	
		Amount (thousands)	Per-cent		Amount (thousands)	Per-cent		Amount (thousands)	Per-cent
Total	53	\$5,335.4	100.0	53	\$6,202.2	100.0	53	\$6,821.2	100.0
Under \$20.0	7	89.3	1.7	6	59.6	1.0	5	48.4	0.7
\$20.0 - \$39.9	13	382.1	7.2	13	391.8	6.3	10	312.2	4.6
\$40.0 - \$59.9	9	442.4	8.3	7	313.3	5.1	9	437.7	6.4
\$60.0 - \$79.9	9	636.0	11.9	8	584.6	9.4	5	355.2	5.2
\$80.0 - \$99.9	5	434.2	8.1	2	167.2	2.7	3	257.6	3.8
\$100.0 - \$199.9	5	675.1	12.6	12	1,714.9	27.6	14	1,824.8	26.8
\$200.0 - \$499.9	3	830.1	15.6	3	937.8	15.1	5	1,379.1	20.2
\$500.0 & over	2	1,846.2	34.6	2	2,033.0	32.8	2	2,206.2	32.3

	FY 1967			FY 1968			FY 1969		
	Number of States	Expenditures		Number of States	Expenditures		Number of States	Expenditures	
		Amount (thousands)	Per-cent		Amount (thousands)	Per-cent		Amount (thousands)	Per-cent
Total	53	\$7,442.1	100.0	^a 52	^a \$7,375.1	100.0	^b 51	^b \$7,049.9	100.0
Under \$20.0	3	16.6	0.2	5	53.3	0.7	5	32.1	0.5
\$20.0 - \$39.9	8	240.2	3.2	12	402.9	5.5	10	337.4	4.8
\$40.0 - \$59.9	13	616.1	8.3	5	259.7	3.5	4	200.9	2.8
\$60.0 - \$79.9	4	279.6	3.8	6	390.1	5.3	9	613.5	8.7
\$80.0 - \$99.9	6	519.3	7.0	6	548.3	7.4	4	380.0	5.4
\$100.0 - \$199.9	12	1,714.2	23.0	11	1,519.5	20.6	13	1,896.7	26.9
\$200.0 - \$499.9	5	1,267.7	17.0	5	1,235.1	16.7	4	990.0	14.0
\$500.0 & over	2	2,788.4	37.5	2	2,966.2	40.3	2	2,599.3	36.9

^aExcludes Connecticut.

^bExcludes Connecticut and Iowa.

Manpower

State and local radiation control programs reported a total full-time equivalent of 448 professional and semiprofessional personnel (389 full-time and 325 part-time personnel) working in radiation control programs as of June 30, 1969.

Table 9 shows the number and man equivalence (see Appendix B Definitions) of personnel by State and local agencies for each fiscal year since 1964.

Although there is only a slight increase in total man equivalence for 1969 as compared to the previous fiscal year, the number of persons working in radiological health on a full-time basis has increased 6 percent and 31 percent since fiscal year 1964.

Total man equivalence at the end of each fiscal year since 1964 is shown in figure 3. The total man equivalence has increased 19.4 percent since 1964 and 2.1 over 1968.

Fourteen States reported 32 budgeted and funded positions which were vacant at the end of the fiscal year. In fiscal year 1968, 24 States had 50 budgeted but unfilled positions.

Figure 3. Total Man Equivalence for State and Local Radiological Health Activities, Fiscal Years 1964 to 1969

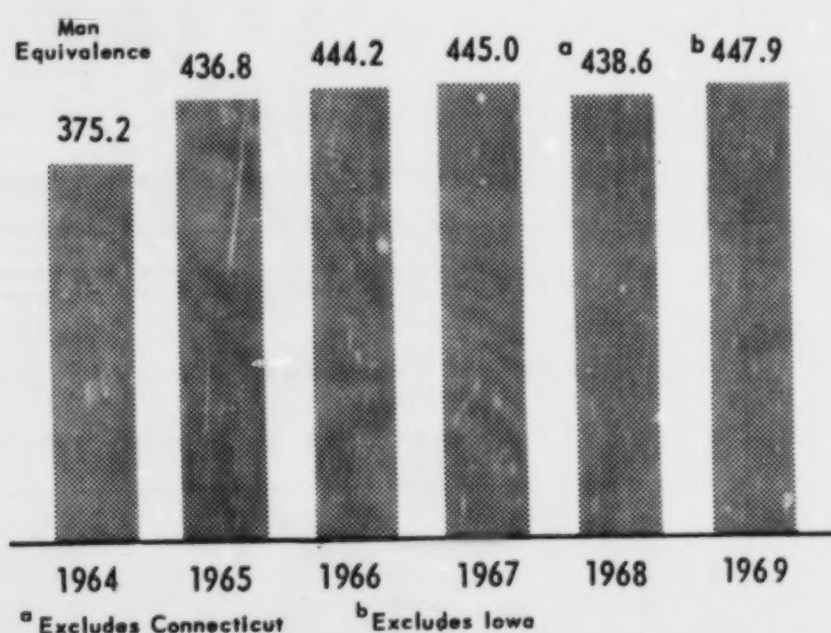


Table 9. - Number and Total Man Equivalence^a of Radiological Health Personnel Employed by State and Local Health Agencies, Fiscal Years 1964 to 1969

	Number Employed by State and Local Agencies																
	Fiscal Year 1964		Fiscal Year 1965		Fiscal Year 1966		Fiscal Year 1967		Fiscal Year 1968		Fiscal Year 1969						
	Full Time	Part Time Equivalent	Full Time	Part Time Equivalent	Full Time	Part Time Equivalent	Full Time	Part Time Equivalent	Full Time	Part Time Equivalent	Full Time	Part Time Equivalent					
Total - All Agencies	297	439	375.2	346	487	436.8	360	433	444.2	364	423	445.0	b 368	b 387	c 389	c 325	d 47.9
State Health Departments	243	402	313.6	284	452	367.9	297	403	374.5	297	356	367.0	299	330	319	265	371.4
Alabama	4	3	4.3	7	3	8.3	10	3	10.8	9	3	9.9	10	3	8	3	9.0
Alaska	-	1	0.1	-	1	0.1	-	-	-	-	-	-	-	-	-	-	-
Arizona	-	5	1.4	-	4	1.4	1	3	2.0	3	2	3.4	3	1	3	-	3.0
Arkansas	5	5	6.1	6	3	6.3	6	5	6.7	6	5	6.7	12	4	12	2	12.6
California	34	2	34.6	34	3	35.1	32	3	33.1	31	3	32.1	31	3	31	3	32.0
Colorado	-	7	2.1	2	12	4.9	5	6	6.3	6	5	7.0	6	8	8	7	9.6
Connecticut	6	7	7.5	6	8	7.7	6	8	7.7	7	8	8.7	(NR)	(NR)	5	10	7.4
Delaware	2	1	2.1	2	1	2.1	3	-	3.0	3	-	3.0	2	-	2	-	2.0
District of Columbia	1	3	2.2	3	3	3.5	3	1	3.1	4	1	4.1	4	1	3	5	3.9
Florida	11	8	13.0	14	14	17.7	14	17	17.7	12	21	16.6	10	18	12	17	14.9
Georgia	7	2	7.3	7	2	7.3	8	1	8.1	9	1	9.1	10	1	10	1	10.1
Hawaii	2	5	3.3	2	5	3.1	2	5	3.1	2	5	3.0	2	4	2	4	2.9
Idaho	1	12	2.3	1	11	2.7	1	11	2.0	1	19	2.7	2	19	2	-	2.0
Illinois	13	9	14.7	12	15	13.9	9	13	11.0	11	8	11.9	14	9	13	9	13.9
Indiana	4	7	5.0	5	31	6.8	5	5	5.8	4	6	4.5	4	5	5	4	5.5
Iowa	4	7	4.6	5	8	5.7	4	9	5.5	5	7	5.7	3	7	(NR)	(NR)	(NR)
Kansas	3	9	5.9	4	9	6.7	3	5	4.3	2	6	3.6	4	6	4	5	5.1
Kentucky	7	-	7.0	6	9	6.0	7	-	7.0	7	-	7.0	7	-	7	1	7.3
Louisiana	1	9	3.3	2	11	5.4	6	10	9.2	6	-	6.0	6	-	7	-	7.0
Maine	3	4	4.3	3	4	4.3	3	3	4.0	2	3	3.0	1	4	1	5	2.3
Maryland	6	-	6.0	6	-	6.0	8	1	8.5	7	1	7.2	8	1	8	1	8.1
Massachusetts	6	11	9.0	7	13	9.7	7	13	9.7	8	12	10.5	8	12	9	10	10.7
Michigan	3	15	5.6	4	19	7.0	5	16	6.1	5	11	5.5	5	5	5	5	5.5
Minnesota	5	6	6.5	5	6	6.3	3	7	4.6	4	7	6.0	4	6	4	4	5.4
Mississippi	3	4	3.3	3	6	4.1	3	4	3.5	4	1	4.1	4	1	4	1	4.0
Missouri	5	7	5.9	6	7	6.9	6	7	6.9	4	7	5.0	4	7	4	6	4.9
Montana	1	5	1.4	1	5	1.4	-	3	0.4	-	5	0.2	-	4	-	1	(d)
Nebraska	1	5	2.2	3	3	3.2	-	2	3.1	4	2	4.1	3	2	4	2	4.1
Nevada	-	5	0.9	-	6	0.7	-	4	0.4	-	2	0.5	-	5	-	5	0.1
New Hampshire	1	9	3.1	1	5	2.5	2	3	2.8	2	4	2.6	3	2	3	2	3.4
New Jersey	16	-	16.0	16	-	16.0	18	-	18.0	15	-	15.0	14	-	17	-	17.0
New Mexico	2	6	3.5	3	6	4.4	3	8	5.5	4	10	6.0	1	11	3	6	3.4

Table 9. - (Continued)

New York	35	86	40.1	41	86	54.0	45	87	58.8	40	87	53.8	37	87	50.7	45	57	54.2
North Carolina	6	7	8.1	6	9	8.5	5	9	7.7	8	4	8.3	9	5	9.6	9	5	9.6
North Dakota	2	5	2.4	2	4	2.3	4	4	4.3	5	4	6.1	1	4	3.1	1	4	2.5
Ohio	3	4	3.7	3	10	5.4	3	19	6.7	3	17	8.6	4	24	9.4	4	23	9.4
Oklahoma	1	5	4.2	3	5	5.4	5	2	5.9	4	4	5.9	3	3	4.1	4	3	5.3
Oregon	4	4	5.1	6	2	6.3	6	3	6.6	6	1	6.0	6	1	6.0	6	-	6.0
Pennsylvania	7	48	11.7	11	50	16.2	10	49	15.1	9	12	11.4	11	1	11.5	12	1	12.3
Rhode Island	-	11	2.5	-	12	2.8	-	9	2.8	-	10	2.8	1	9	2.9	-	7	2.7
South Carolina	3	3	3.9	3	2	3.9	2	3	3.4	1	4	3.0	4	3	5.4	4	3	5.4
South Dakota	1	2	1.1	1	2	1.1	1	2	1.1	-	3	1.1	-	3	0.9	-	3	0.8
Tennessee	2	7	2.8	5	6	5.7	5	6	5.6	5	5	5.5	3	9	4.0	4	4	4.1
Texas	11	5	12.4	15	4	17.0	11	4	12.8	10	5	12.3	11	2	12.2	10	1	10.3
Utah	-	11	2.1	-	13	2.1	-	10	2.4	-	12	1.9	1	10	2.0	1	9	2.0
Vermont	-	3	0.5	-	3	0.6	-	3	0.7	1	2	1.8	1	2	1.8	1	3	1.8
Virginia	2	5	3.5	3	2	3.7	4	-	4.0	3	5	3.2	4	5	4.8	3	6	4.8
Washington	4	5	6.0	3	7	6.1	2	6	5.0	5	5	7.4	5	4	5.8	6	6	7.7
West Virginia	-	4	0.8	-	5	0.9	1	2	1.8	2	2	2.8	2	2	2.8	2	2	2.8
Wisconsin	1	5	2.5	3	2	4.0	3	3	4.5	3	4	3.7	5	-	5.0	5	-	5.0
Wyoming	-	2	1.3	-	2	1.3	-	2	0.9	-	2	1.0	-	2	1.2	-	2	1.2
Puerto Rico	4	1	4.3	3	1	3.3	4	1	4.3	5	2	5.6	6	1	6.3	6	1	6.3
Virgin Islands	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1
Local Health Departments	43	31	49.8	48	26	53.7	46	25	52.3	45	34	52.5	47	28	52.8	49	28	54.1
Jefferson Co., Alabama	1	3	2.0	1	3	1.6	1	3	1.2	1	3	1.2	2	3	2.3	2	3	2.6
Alameda Co., California	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0
Los Angeles Co., California	5	-	5.0	8	-	8.0	7	-	7.0	7	-	7.0	8	-	8.0	9	-	9.0
Orange Co., California	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0
Vernon (City), California	1	-	1.0	-	1	0.5	-	1	0.5	1	-	1.0	-	1	0.3	-	1	0.3
Denver Dept. of Hlth. & Heps.	NA	NA	NA	NA	NA	NA	1	1	1.5	1	2	1.3	(e)	(e)	(e)	(e)	(e)	(e)
Baltimore, Maryland	1	4	2.5	1	4	2.1	-	5	2.1	NA	NA	NA	(f)	(f)	(f)	(f)	(f)	(f)
Detroit, Michigan	1	14	2.4	1	4	1.3	1	5	2.0	1	15	3.6	1	15	3.0	1	16	2.5
New York, New York	25	2	26.0	29	-	29.0	28	-	28.0	28	-	28.0	27	-	27.0	27	-	27.0
Philadelphia, Pennsylvania	5	8	6.9	4	14	7.2	4	10	6.0	2	14	6.4	5	9	8.2	6	8	8.7
Other Agencies	11	6	11.8	14	9	15.2	17	5	17.4	22	33	25.5	22	29	26.6	21	32	22.4
Calif. Dept. of Ind. Rel.	4	-	4.0	5	-	5.0	5	-	5.0	5	-	5.0	5	-	5.0	5	-	5.0
La. Environ. Surveill. Prog.	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	10	4.9	2	12	5.2	NA	NA	NA
Mass. Dept. of Labor	NA	NA	NA	1	4	1.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N.Y. Bur. of X-ray Technology	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	18	3.3	4	12	5.0	4	27	5.0
N.Y. State Dept. of Labor	7	6	7.8	8	5	8.5	12	5	12.4	12	5	12.3	11	5	11.4	12	5	12.4

^aExcludes Public Health Service personnel on loan to States. ^bExcludes Connecticut. ^cExcludes Iowa. ^dThe man equivalence for one person working in the radiological health program amounts to one percent of one man year. ^eIncluded with Colorado. ^fIncluded with Maryland. NA Not Available. -Represents zero.

Seven full-time professional Public Health Service personnel were assigned to State radiation control programs during fiscal year 1969. These persons have not been included in any of the tables or figures.

Thirty-seven percent of all radiological health workers are concentrated in the Northeast Region of the nation, with 29.1 percent in the South, 19.7 in the West, and 14.4 in the North Central States (table 10).

Table 10. - Total Man Equivalence^a for State and Local Radiological Health Activities by Geographic Region, Fiscal Years 1968 and 1969

Region	1968		1969	
	Man Equivalence	Percent	Man Equivalence	Percent
United States	^b 438.6	100.0	^c 447.9	100.0
Northeast	148.2	33.7	164.9	36.8
North Central	69.1	15.8	64.6	14.4
South	135.4	30.9	130.2	29.1
West	85.9	19.6	88.2	19.7

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Connecticut.

^cExcludes Iowa.

The distribution of the number of States by selected man equivalent ranges is shown in table 11.

In 1964, there were seven States with 10 or more persons working in radiological health; in fiscal year 1969, there were 11 States in this range with a full-time equivalent of 271 men.

These 11 States represent 49 percent of the nation's population and contributed 60.5 percent of the total man power.

The median in the 52 States reporting data on personnel in FY 1969 was the equivalent of approximately 5.3 people as compared with a median of 4.8 in 1968.

The general levels of responsibility of personnel involved in radiological health activities are denoted by the following categories: program administrator, radiological health director, radiological health specialist, radiological health technician, and supporting personnel (see

Table 11. - Distribution of the Number of States in Selected Man-Equivalent Ranges^a, Fiscal Years 1964 to 1969

Ranges of Man Equivalence	Fiscal Year 1964			Fiscal Year 1965			Fiscal Year 1966		
	Number of States	Personnel		Number of States	Personnel		Number of States	Personnel	
		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total
Total	53	375.2	100.0	53	436.8	100.0	53	444.2	100.0
Under 2.0	9	7.6	2.0	9	7.6	1.7	8	5.5	1.2
2.0 - 3.9	18	50.8	13.5	12	35.2	8.1	11	31.2	7.0
4.0 - 5.9	8	39.3	10.5	10	49.3	11.3	13	63.3	14.3
6.0 - 7.9	7	46.7	12.4	10	66.4	15.2	8	57.1	12.9
8.0 - 9.9	4	33.6	9.0	4	34.8	8.0	4	35.1	7.9
10.0 & over	7	197.2	52.6	8	243.5	55.7	9	252.0	56.7

Ranges of Man Equivalence	Fiscal Year 1967			Fiscal Year 1968			Fiscal Year 1969		
	Number of States	Personnel		Number of States	Personnel		Number of States	Personnel	
		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total
Total	53	445.0	100.0	^b 52	^b 438.6	100.0	^c 52	^c 447.9	100.0
Under 2.0	8	6.6	1.5	8	6.5	1.5	7	4.0	.9
2.0 - 3.9	12	36.8	8.3	12	36.4	8.3	12	32.9	7.3
4.0 - 5.9	9	44.5	10.0	12	57.6	13.1	11	53.6	12.0
6.0 - 7.9	8	52.4	11.8	4	26.8	6.1	6	41.7	9.3
8.0 - 9.9	6	52.1	11.7	4	35.8	8.2	5	44.7	10.0
10.0 & over	10	252.6	56.7	12	275.5	62.8	11	271.0	60.5

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Connecticut. ^cExcludes Iowa.

Table 12. - Distribution of State and Local Radiological Health Personnel^a by Personnel Category, Fiscal Years 1964 to 1969

Personnel Categories	Fiscal Year 1964			Fiscal Year 1965			Fiscal Year 1966		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	736	297	439	833	346	487	793	360	433
Program Administrators	82	-	82	78	-	78	69	-	69
Radiological Health Directors	55	34	21	61	37	24	64	41	23
Radiological Health Specialists	223	197	26	272	244	28	287	253	34
Radiological Health Technicians	71	66	5	71	65	6	72	66	6
Supporting Personnel	305	-	305	351	-	351	301	-	301
Personnel Categories	Fiscal Year 1967			Fiscal Year 1968			Fiscal Year 1969		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	787	364	423	^b 755	368	387	^c 714	389	325
Program Administrators	75	-	75	72	-	72	64	-	64
Radiological Health Directors	60	41	19	57	42	15	56	43	13
Radiological Health Specialists	286	258	28	271	254	17	283	263	20
Radiological Health Technicians	73	65	8	80	72	8	90	83	7
Supporting Personnel	293	-	293	275	-	275	221	-	221

^aExcludes Public Health Service personnel on loan to States.
^bExcludes Connecticut.

- Represents zero.
^cExcludes Iowa.

Appendix B, Definitions). Of the 389 full-time radiological health workers in health departments in 1969, 43 were classified as radiological health directors, 263 were radiological health specialists, and 83 were radiological health technicians (table 12).

Directors, who may administer the total radiological health program, can be defined as personnel with moderate to wide experience in public health programming with a physical science, biological or engineering degree--many with master's or doctorate degrees. Specialists may direct one or more program areas and also hold degrees in engineering, biological or physical sciences. Technicians are personnel who have high school degrees and may have additional college or technical courses in radiological or related health activities.

The number of full-time radiological health directors has increased 2.4 percent over 1968; radiological health specialists 3.5 percent, and radiological health technicians 15.3 percent. For distribution of personnel by category and State for fiscal year 1969, see Appendix A, table 2.

Figure 4 shows total man equivalence by program areas for selected fiscal years. Appendix A, table 3 presents man equivalence by program area and State for fiscal year 1969.

Table 13 shows radiological health personnel man equivalence by program area for fiscal years 1964 through 1969. During fiscal year 1969, 36 percent of all personnel were working in x-ray survey and control, 24.7

Figure 4. Total Man Equivalence for State and Local Radiological Health Activities by Program Area and Selected Fiscal Years

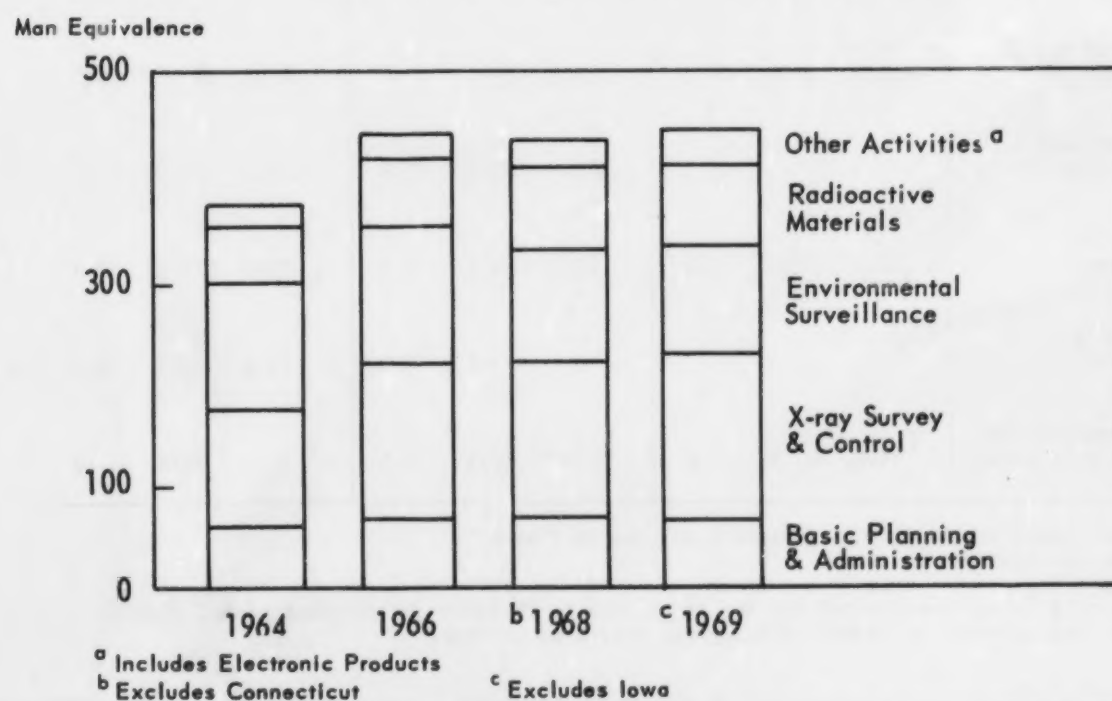


Table 13. - Radiological Health Personnel^a Man Equivalence by Program Area, Fiscal Years 1964 to 1969

Program Area	Fiscal Year 1964			Fiscal Year 1965			Fiscal Year 1966		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	375.2	297.0	78.2	436.8	346.0	90.8	444.2	360.3	83.9
Basic Planning and Administration	58.2	32.1	26.1	62.4	37.4	25.0	60.9	39.1	21.8
X-ray Survey and Control	118.6	100.2	18.4	143.1	116.4	26.7	155.5	131.1	24.4
Environmental Surveillance	127.1	102.7	24.4	143.3	115.5	27.8	135.4	107.7	27.7
Radioactive Materials	51.5	45.4	6.1	65.0	57.8	7.2	68.6	60.5	8.1
Other Radiological Health Activities	19.8	16.6	3.2	23.0	18.9	4.1	23.8	21.9	1.9
Program Area	Fiscal Year 1967			Fiscal Year 1968			Fiscal Year 1969		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	445.0	364.0	81.0	^b 438.6	368.0	70.6	^c 447.9	389.2	58.7
Basic Planning and Administration	62.0	41.6	20.4	63.4	46.4	17.0	64.5	49.0	15.5
X-ray Survey and Control	151.2	126.9	24.3	155.3	133.1	22.2	161.2	141.6	19.6
Environmental Surveillance	128.6	101.9	26.7	112.2	91.8	20.4	110.6	93.9	16.7
Radioactive Materials	72.0	66.4	5.6	80.5	74.9	5.6	79.2	76.3	2.9
Electronic Products ^d				5.6	4.7	0.9	11.2	9.1	2.1
Other Radiological Health Activities	31.2	27.2	4.0	21.6	17.1	4.5	21.2	19.3	1.9

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Connecticut.

^cExcludes Iowa.

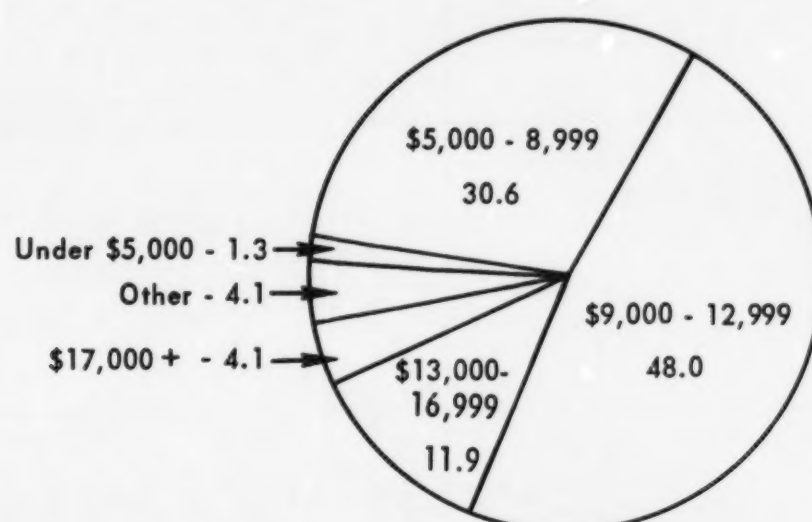
^dData on this category collected for the first time in FY 1968. In previous years, this category was included in "other radiological health activities."

percent in environmental surveillance, 17.7 percent in radioactive materials, 14.4 percent in basic planning and administration, 2.5 percent in electronic products, and 4.7 percent in other radiological health activities. Man equivalence has doubled in electronic products category.

In fiscal year 1969, 64 percent of full-time radiological health personnel were earning a yearly salary of \$9,000 or more, with 32 percent earning under \$9,000.

The remaining four percent is made up by contractual employees, consultants, and persons for whom salary data were not supplied (figure 5).

Figure 5. Percent Distribution of Full-time State and Local Radiological Health Personnel by Salary Range, Fiscal Year 1969



These figures compare with 52 percent earning yearly salaries of \$9,000 or more in fiscal year 1968, and 46 percent earning below \$9,000.

In fiscal year 1969, 51.2 percent of full-time radiological health directors and only 3.4 percent of radiological health specialists earned \$15,000 or more annually (table 14).

Sixty-one percent of the specialists were earning yearly salaries of \$9,000-\$12,999. Fifteen percent of radiological health technicians earned salaries in the \$9,000-10,999 range, while the greater percentage, approximately 80 percent, earned between \$5,000 and \$8,999 yearly.

Table 14. - Number and Percent Distribution of Radiological Health Personnel^a by Personnel Category and Salary Range, Fiscal Year 1969

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Salary Range	All Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Total	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Full Time	b389	100.0	-	...	43	100.0	263	100.0	83	100.0	-	...
Under \$5,000	5	1.3	-	...	-	...	3	1.1	2	2.4	-	...
\$5,000 - \$6,999	45	11.6	-	...	1	2.3	10	3.8	34	40.9	-	...
\$7,000 - \$8,999	74	19.0	-	...	-	...	42	16.0	32	38.6	-	...
\$9,000 - \$10,999	119	30.5	-	...	3	7.0	104	39.6	12	14.5	-	...
\$11,000 - \$12,999	68	17.5	-	...	11	25.6	56	21.3	1	1.2	-	...
\$13,000 - \$14,999	31	8.0	-	...	5	11.6	26	9.9	-	...	-	...
\$15,000 - \$16,999	15	3.9	-	...	9	20.9	6	2.3	-	...	-	...
\$17,000 & over	16	4.1	-	...	13	30.3	3	1.1	-	...	-	...
Other ^c	16	4.1	-	...	1	2.3	13	4.9	2	2.4	-	...
Part Time	b325	100.0	64	100.0	13	100.0	20	100.0	7	100.0	221	100.0
Under \$5,000	5	1.5	-	...	-	...	-	...	3	42.8	2	.9
\$5,000 - \$6,999	8	2.5	-	...	-	...	1	5.0	2	28.6	5	2.3
\$7,000 - \$8,999	18	5.5	-	...	-	...	2	10.0	1	14.3	15	6.8
\$9,000 - \$10,999	33	10.2	-	...	2	15.4	7	35.0	-	...	24	10.9
\$11,000 - \$12,999	36	11.1	1	1.6	5	38.4	4	20.0	-	...	26	11.8
\$13,000 - \$14,999	25	7.7	10	15.6	3	23.1	-	...	-	...	12	5.4
\$15,000 - \$16,999	20	6.2	9	14.1	2	15.4	1	5.0	-	...	8	3.6
\$17,000 & over	53	16.3	42	65.6	1	7.7	1	5.0	-	...	9	4.1
Other ^c	127	39.0	2	3.1	-	...	4	20.0	1	14.3	120	54.2

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cIncludes personnel for whom salaries are unknown or not available, contractual employees, and consultants.
-Represents zero.

Table 15. - Number and Percent Distribution of Radiological Health Personnel^a by Salary Range and Geographic Region, Fiscal Year 1969

Geographic Region	All Personnel	Under \$5,000	\$5,000-6,999	\$7,000-8,999	\$9,000-10,999	\$11,000-12,999	\$13,000-14,999	\$15,000-16,999	\$17,000- & over	Other ^b
	Per- cent	Num- ber	Per- cent	Num- ber	Per- cent	Num- ber	Per- cent	Num- ber	Per- cent	Num- ber
Full Time	c389 100.0	5 100.0	45 100.0	74 100.0	119 100.0	68 100.0	31 100.0	15 100.0	16 100.0	16 100.0
	142 36.5	- ...	15 33.3	26 35.1	42 35.3	21 30.9	11 35.5	6 40.0	8 50.0	13 81.2
	50 12.9	- ...	6 13.3	11 14.9	14 11.8	9 13.2	4 12.9	3 20.0	3 18.7	- ...
	117 30.0	5 100.0	20 44.5	31 41.9	33 27.7	12 17.6	7 22.6	4 26.7	3 18.8	2 12.5
West	80 20.6	- ...	4 8.9	6 8.1	30 25.2	26 38.3	9 29.0	2 13.3	2 12.5	1 6.3
Part Time	c325 100.0	5 100.0	8 100.0	18 100.0	33 100.0	36 100.0	25 100.0	20 100.0	53 100.0	127 100.0
Northeast	135 41.6	1 20.0	- ...	4 22.2	6 18.2	8 22.2	6 24.0	2 10.0	13 24.5	95 74.8
North Central	84 25.8	- ...	4 50.0	1 5.6	7 21.2	14 39.0	8 32.0	8 40.0	19 35.9	23 18.1
South	62 19.1	4 80.0	4 50.0	7 38.9	10 30.3	7 19.4	7 28.0	6 30.0	16 30.2	1 .8
West	44 13.5	- ...	- ...	6 33.3	10 30.3	7 19.4	4 16.0	4 20.0	5 9.4	8 6.3

^aExcludes Public Health Service personnel on loan to States.

^bIncludes personnel for whom salaries are unknown or not available, contractual employees, and consultants.

^cExcludes Iowa.

-Represents zero.

Eighty-six percent of the full-time personnel located in the western region of the United States earned more than \$9,000 yearly; 66 percent in the North Central region; 62 percent in the Northeast; and 50 percent in the South (table 15).

Appendix A, tables 4 through 11 give the distribution of all personnel by State for each salary range for fiscal year 1969.

The basic disciplines of full-time radiological health directors and radiological health specialists are shown for each State for fiscal year 1969 in Appendix A, table 12. In fiscal year 1969, there were 43 full-time radiological health directors and 263 radiological health specialists (table 16), a total of 306 personnel in these two categories. The basic disciplines of the majority of these personnel are in physics, chemistry, and engineering, and these disciplines accounted for 67.4 percent of the total for fiscal year 1969. As in fiscal year 1968, physics is the predominant discipline in 1969--in 1964 chemistry was the discipline of the majority of personnel.

Table 16. - Distribution of Full-time Radiological Health Directors^a and Radiological Health Specialists^a by Discipline, Fiscal Years 1964 to 1969

Discipline	Fiscal Year					
	1964	1965	1966	1967	1968	1969
Total	231	281	294	299	^b 296	^c 306
Chemist	65	71	74	69	64	61
Physicist	41	60	74	86	90	107
Engineer	42	53	47	42	34	38
Sanitarian	27	41	34	31	26	29
Biologist	22	19	14	24	23	20
M.D.	4	5	4	4	3	4
D.D.S.	1	-	-	-	-	1
All Other	29	32	47	43	56	46

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Connecticut.

^cExcludes Iowa.

-Represents zero.

Equipment

The cumulative value of equipment used in State radiation control programs amounted to \$4,952,800 in fiscal year 1969 (figure 6). The value of equipment is tabulated on a cumulative basis and does not reflect depreciation costs.

By the end of fiscal year 1969, 12 States had equipment valued at \$100,000 or more. The combined cost of equipment owned by these 12 States equaled \$2,846,700 or approximately 57.5 percent of the total for all States (table 17). The median valuation of equipment was \$68,100 in fiscal year 1969 as compared with \$64,600 in fiscal year 1968.

In 1969, an estimated \$196,000 was spent on new equipment as compared with \$248,400 in 1968. Twenty States did not purchase any new equipment during the year and 19 States spent less than \$5,000. Nine States spent between \$5,000 and \$15,000 and three States had purchases totaling \$15,000 or more (table 18 and figure 7).

Table 19 shows the number of specific types of laboratory and field equipment presently owned by State health agencies.

Figure 6. Cumulative Value of Equipment Purchased by State and Local Health Agencies for Radiological Health Activities, Fiscal Years 1964 to 1969

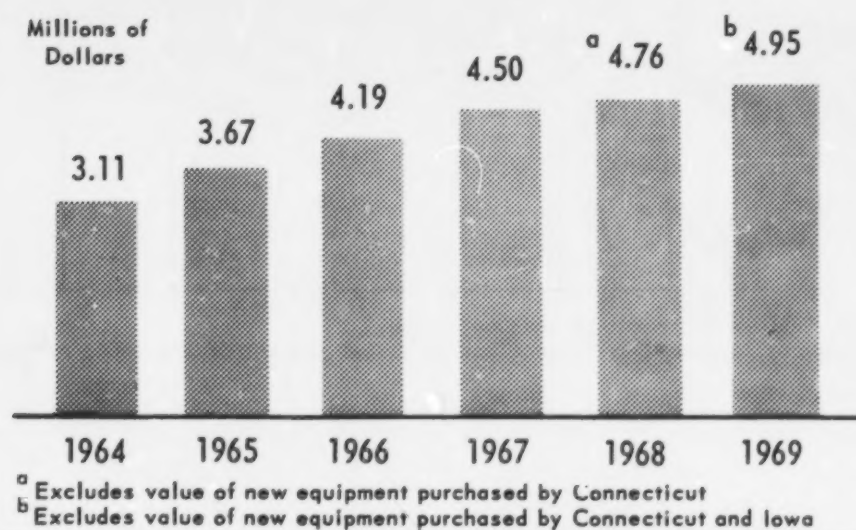


Table 17. - Distribution of the Number of States by Selected Cost Ranges of Equipment^a, Cumulative Value, for Radiological Health Activities Fiscal Years 1964 to 1969

Cost Ranges (thousands)	Available for Use 6/30/64			Available for Use 6/30/65			Available for Use 6/30/66		
	Number of States	Distribution of Equipment		Number of States	Distribution of Equipment		Number of States	Distribution of Equipment	
		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total
Total	53	\$3,110.6	100.0	53	\$3,665.7	100.0	53	\$4,188.6	100.0
Under \$20.0	19	241.3	7.8	15	176.3	4.8	9	78.9	1.9
\$20.0-\$39.9	8	221.3	7.1	11	325.8	8.9	11	310.5	7.4
\$40.0-\$59.9	10	489.9	15.8	7	356.8	9.8	9	405.0	9.7
\$60.0-\$79.9	8	573.6	18.4	7	492.3	13.4	8	567.3	13.5
\$80.0-\$99.9	3	270.5	8.7	5	430.0	11.7	7	608.7	14.5
\$100.0-\$249.9	3	386.7	12.4	6	842.0	23.0	7	1,045.6	25.0
\$250.0-\$499.9	1	374.9	12.1	1	388.5	10.6	1	405.0	9.7
\$500.0 & over	1	552.4	17.7	1	654.0	17.8	1	767.6	18.3

Cost Ranges (thousands)	Available for Use 6/30/67			Available for Use 6/30/68			Available for Use 6/30/69		
	Number of States	Distribution of Equipment		Number of States	Distribution of Equipment		Number of States	Distribution of Equipment	
		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total
Total	53	\$4,507.9	100.0	53	\$4,756.8	100.0	53	\$4,952.8	100.0
Under \$20.0	9	86.1	1.9	8	72.6	1.5	7	55.3	1.1
\$20.0-\$39.9	8	226.0	5.0	8	245.2	5.2	9	283.2	5.7
\$40.0-\$59.9	10	476.1	10.6	8	388.1	8.2	6	290.6	5.9
\$60.0-\$79.9	7	481.2	10.7	10	686.3	14.4	12	843.5	17.0
\$80.0-\$99.9	9	794.5	17.6	7	615.3	12.9	7	633.5	12.8
\$100.0-\$249.9	8	1,210.0	26.8	9	1,219.5	25.6	9	1,254.1	25.3
\$250.0-\$499.9	1	417.2	9.3	2	670.4	14.1	2	681.8	13.8
\$500.0 & over	1	816.8	18.1	1	859.4	18.1	1	910.8	18.4

^aExcludes Public Health Service equipment on loan to States.

^bExcludes value of equipment purchased by Connecticut in fiscal years 1968 and 1969; by Iowa in fiscal year 1969.

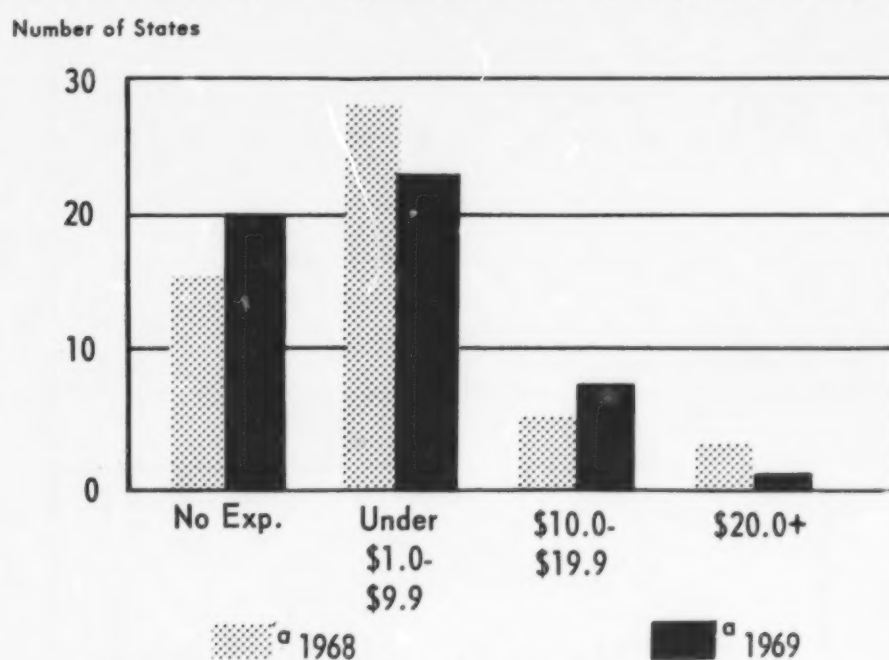
Table 18. - Distribution of the Number of States by Selected Cost Ranges of New Laboratory and Field Survey Equipment^a Purchased for Radiological Health Activities, Fiscal Years 1968 and 1969 (thousands of dollars)

Cost Ranges	1968			1969		
	Number of States	Total Cost	Percent of Total Cost	Number of States	Total Cost	Percent of Total Cost
Total	^b 51	\$248.4	100.0	^b 51	\$196.0	100.0
No expenditure	15	-	-	20	-	-
Under \$1.0	5	2.6	1.0	8	3.0	1.5
\$1.0-\$4.9	14	28.3	11.4	11	21.8	11.1
\$5.0-\$9.9	9	58.9	23.7	4	27.2	13.9
\$10.0-\$14.9	4	48.4	19.5	5	60.1	30.7
\$15.0-\$19.9	1	18.6	7.5	2	32.5	16.6
\$20.0-\$24.9	1	20.4	8.2	-	-	-
\$25.0 & over	2	71.2	28.7	1	51.4	26.2

^aExcludes Public Health Service equipment on loan to States.

^bExcludes Connecticut and Iowa.

Figure 7. Distribution of States by Selected Cost Ranges for Laboratory and Survey Equipment Purchased for Radiological Health Activities, Fiscal Years 1968 and 1969



^a Excludes Connecticut and Iowa.

Table 19. - Number and Type of Equipment for State and Local Radiological Health Activities by State,
Fiscal Year 1969a

State	Laboratory Instrumentation							Survey Instruments			
	Internal Proportional Counter	Low-Beta Counter	Multi-Channel Analyzer	Single-Channel Analyzer	Liquid Scintillation Analyzer	Thin-Window GM Counter	Alpha Gas Flow Scintil- lation	Beta-Gamma		Neutron	
								Ion- Chamber	GM Counter		
Total ^b	91	60	61	30	17	33	81	442	412	51	42
State Health Departments	86	59	58	26	16	29	76	416	364	44	38
Alabama	2	1	1	1	-	-	2	4	2	2	-
Alaska	-	1	1	-	-	-	1	3	1	-	-
Arizona	1	-	-	1	-	-	-	4	5	1	-
Arkansas	1	1	1	-	-	1	2	4	3	-	1
California	5	2	2	1	1	-	-	19	7	2	2
Colorado	1	1	2	-	2	1	6	5	12	3	1
Connecticut	1	2	1	1	1	1	4	8	5	-	-
Delaware	2	-	1	1	-	1	1	4	5	-	1
District of Columbia	2	-	1	-	-	1	2	6	4	1	1
Florida	2	1	1	1	-	1	3	27	13	-	-
Georgia	2	1	2	1	-	1	2	12	17	-	1
Hawaii	2	2	1	-	1	2	2	4	1	-	-
Idaho	1	1	1	1	-	-	1	3	3	-	-
Illinois	3	1	1	-	-	1	1	22	24	2	1
Indiana	2	1	1	-	1	-	2	10	4	2	1
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	2	1	1	1	-	1	1	5	4	1	1
Kentucky	2	2	1	-	-	1	2	21	25	2	1
Louisiana	2	1	2	1	-	1	-	4	7	2	-
Maine	4	2	1	-	-	-	1	6	5	-	-
Maryland	1	1	1	1	-	1	1	5	2	1	-
Massachusetts	4	2	1	2	-	1	7	22	23	1	2
Michigan	2	1	1	-	-	1	1	25	4	2	-
Minnesota	1	2	2	-	-	-	2	5	3	-	-
Mississippi	1	-	-	-	-	-	-	3	3	1	1
Missouri	1	1	-	-	-	-	1	6	2	-	1
Montana	1	-	-	-	-	-	1	4	2	-	-
Nebraska	1	-	1	-	-	-	2	5	6	-	1
Nevada	1	-	-	1	1	1	-	1	1	-	-
New Hampshire	1	2	1	1	1	1	3	5	7	1	1

Table 19. - (Continued)

	Laboratory Instrumentation							Survey Instruments			
	Internal Proportional Counter	Low-Beta Counter	Multi-Channel Analyzer	Single-Channel Analyzer	Liquid Scintillation Analyzer	Thin-Window GM Counter		Alpha Gas Scintillation	Beta-Gamma		Neutron
									Ion-Chamber	Scintillation Counter	
New Jersey	2	3	3	1	1	1		3	12	11	2
New Mexico	3	-	-	-	1	1		1	4	2	1
New York	1	5	7	1	3	1		3	1	6	1
North Carolina	4	3	2	1	2	-		-	24	8	-
North Dakota	1	1	2	-	-	-		2	4	6	1
Ohio	3	1	1	-	-	-		-	12	3	-
Oklahoma	1	-	-	-	-	1		2	6	8	1
Oregon	1	1	1	2	-	1		1	6	4	-
Pennsylvania	1	2	1	-	-	3		9	15	16	-
Rhode Island	1	1	1	-	-	1		1	2	2	3
South Carolina	2	1	1	1	-	1		2	5	10	-
South Dakota	1	-	-	-	-	-		1	1	2	1
Tennessee	3	1	1	-	-	1		1	8	9	-
Texas	2	2	1	-	-	-		3	23	36	1
Utah	1	1	1	-	1	-		1	2	24	4
Vermont	1	-	1	-	-	1		-	1	1	1
Virginia	1	1	1	1	-	1		2	6	5	-
Washington	1	2	2	-	-	1		1	8	1	-
West Virginia	-	1	1	1	-	-		1	4	4	1
Wisconsin	2	1	1	-	-	-		2	5	1	-
Wyoming	1	1	-	-	-	-		1	2	2	-
Puerto Rico	1	1	1	1	-	-		-	5	2	-
Virgin Islands	-	-	-	-	-	-		-	2	1	-
Local Health Departments	2	1	2	3	-	3		3	19	31	2
Jefferson Co., Ala.	-	-	-	-	-	-		-	-	-	-
Detroit, Michigan	1	-	1	1	-	2		1	1	1	1
New York, New York	-	-	1	1	-	-		-	6	27	1
Philadelphia, Pa.	1	1	1	1	-	1		1	6	2	-
Other Agencies	3	-	1	1	1	1		2	7	17	2
New York Dept. of Labor	3	-	1	1	1	1		2	7	17	2

^aExcludes Public Health Service equipment on loan to States.

^bExcludes Iowa.

NR Not reported.
-Represented zero.

PROGRAM ACTIVITIES

Environmental Surveillance

The environmental surveillance activities by both Federal and State health agencies in the past have been carried out in relation to fallout from atmospheric nuclear weapons test activities to determine the radioactivity in environmental media. Since the Nuclear Test Ban Treaty in 1962, the levels of fallout radioactivity in the environment have decreased annually until the levels in the principal vectors appear to be constant with respect to the critical nuclides of strontium and cesium. However, widespread fallout may still result from atmospheric testing, accidental releases of radioactivity from underground nuclear tests, nuclear explosives for peaceful purposes, and from other sources.

The States have maintained a capability for environmental surveillance that is adequate not only for local sources such as reactors, but also for widespread fallout. Most surveillance activities are now source-oriented rather than solely for the purpose of detecting fallout from weapons test activities.

Appendix A, table 13, summarizes the surveillance activities of the States at the beginning of fiscal year 1969.

X ray

Table 20 reports the types of compliance programs relating to the dental, medical, and industrial x-ray activities in each State.

Thirty-one States have regulatory programs in dental and medical x ray, with 32 having regulatory industrial x-ray programs.

Dental X ray

In fiscal year 1969, 49 States reported an estimated total of 99,956 dental x-ray machines. Of this total, 94,088 (94.1%) are registered, with 6.1 percent having been registered during the fiscal year.

Of all dental machines, 79,279 (79.3%) have been inspected at least once. During fiscal year 1969, 19,218 (19.2%) machines were inspected. Approximately 71 percent or 71,322 dental machines are reported to be in full compliance with State regulations or recommendations--1,936 (1.9%) having been brought into compliance this year. However, it should be noted that several States are still unable to provide data on compliance activities (table 21).

Medical X ray

Data are still not available from several States on their medical x-ray program activities. However, the reporting States estimated that there are 106,069 medical x-ray machines within their jurisdictions. This number is approximately 3,300 less than the number of machines reported for fiscal year 1968, and appears to represent changes in reporting by only a few of the States. Of the total number of machines, 96,380 (90.9%) are registered, 6,648 (6.3%) having been registered during this fiscal year. Approximately 76 percent of the total number of machines have been inspected at least once and 21,133 machines (19.9%) were inspected during fiscal year 1969.

Fifty percent of the estimated total of medical machines were reported to be in compliance with State regulations or recommendations. Again, it should be noted that several States were unable to report data on compliance activities (table 22).

Table 20. - Type of State Radiological Health X-ray Program by State, Fiscal Year 1969

State	Dental			Medical			Industrial		
	Regu- latory	Volun- tary	Combi- nation	Regu- latory	Volun- tary	Combi- nation	Regu- latory	Volun- tary	Combi- nation
Total	31	8	14	31	7	15	32	4	16
Alabama	X			X			X		
Alaska		X			X			X	
Arizona	X			X			X		
Arkansas	X			X			X		
California	X			X			X		
Colorado	X			X			X		
Connecticut	X			X			X		
Delaware		X			X		X		
District of Columbia			X			X			X
Florida	X			X			X		
Georgia			X			X			X
Hawaii			X			X			X
Idaho	X			X			X		
Illinois	X			X			X		
Indiana			X			X			X
Iowa		X			X			X	
Kansas	X			X			X		
Kentucky	X			X			X		
Louisiana	X			X			X		
Maine	X			X			X		
Maryland	X			X			X		
Massachusetts	X			X			X		
Michigan	X			X			X		
Minnesota			X			X			X
Mississippi	X			X			X		
Missouri	X			X			X		
Montana	X			X			X		
Nebraska	X			X			X		
Nevada			X			X			X
New Hampshire	X			X			X		
New Jersey	X			X			X		
New Mexico			X			X			X
New York	X			X			X		
North Carolina	X			X			X		
North Dakota			X			X			X
Ohio			X			X			X
Oklahoma		X			(a)		X		
Oregon	X			X			X		
Pennsylvania	X			X					X
Rhode Island			X			X			X
South Carolina	X			X			X		
South Dakota			X			X			X
Tennessee	X			X			X		
Texas			X			X			X
Utah		X			X			X	
Vermont			X			X			X
Virginia			X			X			X
Washington	X			X			X		
West Virginia	X			X			X		
Wisconsin	X			X			X		
Wyoming		X				X	NP	NP	NP
Puerto Rico		X			X				X
Virgin Islands		X			X			X	

^aProgram is regulatory with respect to medicare hospitals only.

NP No program.

Table 21. - Estimates of Dental X-ray Program Activities by State, Fiscal Year 1969

State	Estimated Number of Machines	Registration		Inspection		Compliance	
		Total Registration	Machines Registered FY 1969	Total Machines Inspected	Machines Inspected FY 1969	Total Machines in Compliance	Machines Corrected FY 1969
Total	99,956	94,088	6,141	79,279	19,218	71,322	1,936
Alabama	1,302	1,302	265	1,302	931	1,298	180
Alaska	95	95	-	95	14	88	2
Arizona	1,000	872	(UNK)	167	^a 167	150	9
Arkansas	634	634	634	551	20	551	3
California	10,438	9,394	618	9,084	2,690	9,084	(NA)
Colorado	1,204	1,204	71	1,137	105	1,074	11
Connecticut	1,937	1,937	-	1,937	(NA)	1,937	(NA)
Delaware	256	(NP)	(NP)	229	25	229	1
District of Columbia	700	650	40	418	80	200	6
Florida	3,681	3,681	72	2,600	329	2,495	64
Georgia	1,500	(NP)	(NP)	1,297	73	1,297	3
Hawaii	413	396	22	390	40	337	1
Idaho	356	356	45	317	18	317	-
Illinois	^b 5,187	5,187	119	5,187	915	5,187	225
Indiana	2,191	2,191	106	2,191	878	2,171	31
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	1,198	1,198	(UNK)	234	234	222	47
Kentucky	1,105	1,105	50	1,103	206	1,103	25
Louisiana	1,359	1,359	50	121	69	121	26
Maine	408	408	-	408	51	367	5
Maryland	1,872	1,872	128	1,864	194	1,720	155
Massachusetts	3,595	3,595	84	3,595	291	3,595	-
Michigan	3,949	3,949	1,171	^c 2,841	(NA)	(NA)	(NA)
Minnesota	2,093	2,093	32	2,093	429	1,624	23
Mississippi	653	653	12	653	19	515	1
Missouri	2,150	2,090	68	2,019	655	2,000	4
Montana	344	344	-	344	16	258	-
Nebraska	968	968	20	968	20	500	8
Nevada	188	188	-	165	-	-	-
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	5,061	5,061	393	5,061	1,993	4,759	405
New Mexico	385	385	16	294	47	294	2
New York	15,000	14,675	^d 4,500	^d 7,000	^d 3,904	^d 6,850	^d 70
North Carolina	1,600	1,560	63	939	498	939	81
North Dakota	245	245	245	221	8	(UNK)	1
Ohio	4,030	4,030	35	2,024	399	972	127
Oklahoma	(UNK)	6	-	753	-	(UNK)	-
Oregon	1,205	1,205	20	1,188	88	1,152	60
Pennsylvania	6,655	6,568	137	6,313	615	6,200	36
Rhode Island	572	507	-	572	208	572	6
South Carolina	700	651	651	298	42	297	2
South Dakota	345	345	11	314	13	(NA)	(NA)
Tennessee	1,431	1,431	30	1,330	8	1,330	4
Texas	2,745	2,745	97	2,650	^e 198	2,650	44
Utah	628	(NP)	(NP)	628	15	628	-
Vermont	200	200	-	190	4	190	-
Virginia	2,700	1,338	138	1,419	309	1,414	88
Washington	1,818	1,818	183	1,683	1,211	1,683	50
West Virginia	619	619	5	203	246	185	6
Wisconsin	2,496	2,496	43	2,475	838	2,475	114
Wyoming	175	(NP)	(NP)	129	2	129	-
Puerto Rico	550	462	10	265	83	143	10
Virgin Islands	20	20	7	20	20	20	-

^aIncludes initial inspections only.^bIncludes machines in dental offices only.^cDoes not include Detroit.^dNew York City only.^eDoes not include initial or followup inspections.

UNK Unknown.

NP No program.

NA Not available.

NR Not reported.

-Represents zero.

Table 22. - Estimates of Medical X-ray Program Activities by State, Fiscal Year 1969

State	Estimated Number		Registration		Inspection		Compliance	
	Machines	Tubes	Total Registration	Machines Registered FY 1969	Total Machines Inspected	Machines Inspected FY 1969	Total Machines in Compliance	Machines Corrected FY 1969
Total	106,069	127,518	96,380	6,648	80,365	21,133	53,225	3,772
Alabama	1,352	1,628	1,352	51	1,352	747	1,269	41
Alaska	111	131	111	1	93	23	(UNK)	5
Arizona	1,000	1,200	854	854	500	280	(UNK)	(NA)
Arkansas	859	1,014	859	859	859	605	859	64
California	10,414	12,289	9,373	407	9,894	1,837	9,894	545
Colorado	1,308	1,543	1,306	100	1,168	70	1,168	8
Connecticut	(NA)	(NA)	1,075	(NA)	1,075	(NA)	1,075	(NA)
Delaware	249	249	(NP)	(NP)	166	35	166	-
District of Columbia	568	670	568	7	356	424	254	17
Florida	4,420	5,216	4,420	53	2,007	98	1,186	14
Georgia	b1,518	b1,749	(NP)	(NP)	2,039	816	(NA)	(NA)
Hawaii	278	343	259	23	261	49	103	11
Idaho	396	471	396	-	235	16	235	5
Illinois	4,809	5,675	4,809	256	4,809	1,836	4,809	254
Indiana	1,786	2,108	1,786	23	1,786	622	1,560	16
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	1,906	2,249	1,906	-	799	545	637	101
Kentucky	1,807	2,377	1,807	72	1,782	316	1,782	19
Louisiana	1,949	2,300	1,949	(c)	913	415	913	12
Maine	418	493	418	-	418	84	355	20
Maryland	1,564	1,846	1,564	193	1,410	689	1,410	41
Massachusetts	4,122	5,276	2,338	54	1,992	325	1,468	118
Michigan	4,373	5,160	4,373	641	3,319	(NA)	(NA)	(NA)
Minnesota	2,042	2,410	2,042	19	2,032	407	(UNK)	69
Mississippi	1,002	1,182	1,002	21	1,002	444	950	26
Missouri	3,400	4,012	3,140	45	1,504	208	2,000	29
Montana	593	700	593	-	533	12	(UNK)	(UNK)
Nebraska	1,081	1,281	1,081	30	954	81	743	30
Nevada	200	236	168	4	180	2	165	-
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	4,330	5,109	4,330	583	4,330	1,879	3,623	496
New Mexico	529	668	529	15	338	79	338	-
New York	13,798	18,012	13,283	f325	13,275	f4,164	5,095	f567
North Carolina	h1,202	h1,418	1,199	45	832	236	828	58
North Dakota	373	471	373	373	343	64	343	11
Ohio	4,805	5,670	4,805	58	1,348	730	(NA)	(NA)
Oklahoma	2,194	2,589	375	-	406	72	(UNK)	25
Oregon	1,195	1,401	1,195	30	1,168	228	1,110	145
Pennsylvania	6,093	7,190	5,987	275	5,995	1,188	5,930	110
Rhode Island	528	603	390	-	450	28	450	5
South Carolina	1,546	1,824	895	895	178	136	52	52
South Dakota	574	677	574	16	483	35	(NA)	(NA)
Tennessee	1,681	1,983	1,681	38	1,365	783	1,365	501
Texas	4,061	4,792	4,061	141	(c)	(c)	(NA)	194
Utah	571	642	-	-	363	14	362	5
Vermont	250	295	250	135	95	88	95	18
Virginia	2,305	2,720	621	-	361	216	347	40
Washington	2,222	2,622	2,222	(UNK)	2,208	(UNK)	(NA)	(NA)
West Virginia	853	973	853	3	216	96	71	6
Wisconsin	2,499	2,949	2,490	(NA)	2,490	360	(NA)	92
Wyoming	217	256	(NP)	(NP)	76	67	76	-
Puerto Rico	710	837	710	2	600	84	132	2
Virgin Islands	8	9	8	1	7	-	7	-

*Includes initial and followup inspections on items of noncompliance. ^bIncludes machines in hospitals, chest x-ray trucks, and chiropractors' offices only. ^cData not available. ^dNew recordkeeping system being established. ^eBulk of inspections conducted in fiscal year 1970. ^fDoes not include Detroit. ^gNew York City only. ^hIncludes New York City and New York Labor Department. ⁱDoes not include machines in hospitals. ^jIncludes machines in physicians' and chiropractors' offices only. UNK Unknown. NA Not available. NP No program. NR Not reported. -Represents zero.

Industrial X ray

Forty-five States reported a total of 11,086 industrial x-ray machines (table 23) in fiscal year 1969. Of this total, 10,640 machines (96%) are registered, with 906 (8.2%) registered during this fiscal year. Fifteen percent of all machines were inspected during the fiscal year and 440 machines (4%) were brought into compliance with State regulations. Fifty-four percent of all machines were reported to be in compliance (table 24).

Particle Accelerators

Of the States reporting data on particle accelerators, 31 have regulatory programs dealing with these machines. Three States have a voluntary program and 11 reported having a combination program. A total of 732 accelerators was reported this fiscal year, an increase of 27.1 percent from fiscal year 1968.

Four States--California, Florida, New York, and Pennsylvania--reported a total of 262 machines registered or 49.6 percent of all registered accelerators. Twenty-two States reported 103 accelerators (14.1%) were inspected during this fiscal year (table 25).

Table 23. - Estimated Number of Industrial X-ray Machines by Type,
Fiscal Year 1969

State	Total ^a	Number of Machines			
		Radiographic	Fluoroscopic	Other Equipment ^b	Analytical ^c
Total	11,086	5,204	302	896	2,341
Alabama	135	95	5	22	13
Alaska	2	-	-	-	2
Arizona	482	19	-	2	29
Arkansas	51	46	3	-	2
California	1,984	1,025	75	246	638
Colorado	67	-	45	-	22
Connecticut	^e (NA)	-	-	-	-
Delaware	10	5	-	-	5
District of Columbia	92	70	1	-	21
Florida	447	380	4	-	63
Georgia	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Hawaii	10	8	-	-	2
Idaho	22	20	-	-	2
Illinois	751	265	34	218	234
Indiana	350	107	5	180	58
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	81	43	1	1	36
Kentucky	79	36	5	23	15
Louisiana	230	200	-	-	30
Maine	12	11	-	-	1
Maryland	235	(NA)	(NA)	(NA)	(NA)
Massachusetts	287	159	23	9	96
Michigan	391	(NA)	(NA)	(NA)	(NA)
Minnesota	80	62	4	-	14
Mississippi	70	51	2	3	14
Missouri	165	130	5	10	20
Montana	18	13	(UNK)	-	5
Nebraska	28	4	2	-	22
Nevada	(NA)	(NA)	(NA)	(NA)	(NA)
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	630	(f)	(f)	(f)	185
New Mexico	625	616	-	-	9
New York	1,330	834	36	91	369
North Carolina	108	32	3	2	71
North Dakota	5	4	-	-	1
Ohio	531	174	36	78	243
Oklahoma	530	492	2	3	33
Oregon	69	67	2	-	-
Pennsylvania	463	36	1	5	21
Rhode Island	42	5	3	-	34
South Carolina	56	(NA)	(NA)	(NA)	(NA)
South Dakota	22	22	-	-	-
Tennessee	366	(NA)	(NA)	(NA)	(NA)
Texas	658	(NA)	(NA)	(NA)	(NA)
Utah	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Vermont	5	4	1	-	(UNK)
Virginia	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Washington	139	133	3	3	(UNK)
West Virginia	46	30	1	-	15
Wisconsin	174	(NA)	(NA)	(NA)	14
Wyoming	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Puerto Rico	7	5	-	-	2
Virgin Islands	1	1	-	-	-

-Represents zero.

NR Not reported.

UNK Unknown.

NA Not available.

^aIndividual columns sometimes do not add up to total because breakdown is unavailable.

^bIncludes x-ray

gauges and miscellaneous equipment.

^cIncludes diffraction, spectrographic, etc.

^dIncludes 29

itinerant units. ^eThere are 141 registered installations using industrial x-ray equipment; approximately

110 installations were inspected in FY 69. All the installations meet State minimum requirements.

^fNo

breakdown available, but New Jersey has a total of 445 radiographic, fluoroscopic, and other equipment.

^gIncludes out-of-State registrants.

^hPhiladelphia, Pennsylvania, only.

Table 24. - Estimates of Industrial X-ray Program Activities by State, Fiscal Year 1969

State	Registration		Inspection	Compliance	
	Total Registration	Machines Registered FY 1969	Machines Inspected FY 1969	Total Machines in Compliance FY 1969	Machines Corrected FY 1969
Total	10,640	906	1,674	5,940	440
Alabama	127	15	35	110	-
Alaska	2	-	-	(UNK)	-
Arizona	53	^a 38	-	(UNK)	-
Arkansas	49	49	9	21	3
California	1,876	90	216	1,245	119
Colorado	67	5	4	10	-
Connecticut	(NA)	(NA)	(NA)	(NA)	(NA)
Delaware	(NA)	(NA)	1	4	-
District of Columbia	75	1	-	(UNK)	(NA)
Florida	447	23	3	(NA)	-
Georgia	(NP)	(NP)	4	21	4
Hawaii	8	1	-	1	-
Idaho	20	11	7	16	-
Illinois	751	(NA)	197	751	22
Indiana	331	7	246	320	4
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	80	(UNK)	7	12	1
Kentucky	79	1	23	74	-
Louisiana	(NA)	-	(NA)	200	(NA)
Maine	12	-	3	12	-
Maryland	235	14	22	64	-
Massachusetts	287	27	72	287	3
Michigan	391	(NA)	(NA)	(NA)	(NA)
Minnesota	^b 122	5	-	^c 102	-
Mississippi	70	36	36	70	-
Missouri	67	2	13	(UNK)	-
Montana	13	-	-	-	-
Nebraska	16	3	1	11	1
Nevada	23	2	-	(UNK)	-
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	630	63	149	586	169
New Mexico	^b 625	142	-	20	-
New York	1,330	217	500	1,230	90
North Carolina	102	2	11	36	6
North Dakota	5	-	-	(UNK)	(UNK)
Ohio	531	22	21	(X)	(X)
Oklahoma	528	7	5	374	5
Oregon	69	1	36	69	-
Pennsylvania	^c 47	18	^c 19	^c 44	^c 10
Rhode Island	40	-	1	12	-
South Carolina	56	31	1	1	(NA)
South Dakota	^b 22	2	2	-	-
Tennessee	366	5	5	9	3
Texas	658	13	(NA)	(UNK)	(NA)
Utah	-	-	-	(UNK)	-
Vermont	-	-	-	(UNK)	(NA)
Virginia	77	23	1	(NA)	-
Washington	139	-	16	62	(NA)
West Virginia	46	-	-	(UNK)	-
Wisconsin	160	(NA)	3	160	-
Wyoming	(NP)	-	-	-	-
Puerto Rico	7	-	5	6	-
Virgin Islands	1	-	-	-	-

- Represents zero. NA Not available. NP No program. NR Not reported. UNK Unknown. X Not applicable.

^aIncludes 29 itinerant machines.^bIncludes out-of-State registrants.^cPhiladelphia, Pennsylvania, only.

Table 25. - Estimates of Particle Accelerator Program Activities by State, Fiscal Year 1969

State	Total Number of Particle Accelerators	Total Number of Particle Accelerator Users	Type of Program			Total Number Registered	Number Inspected FY 1969
			Voluntary	Regulatory	Combination		
Total	732	306	3	31	11	528	103
Alabama	10	10		X		10	1
Alaska	-	-	(NP)	(NP)	(NP)	-	(NP)
Arizona	3	2		X		3	3
Arkansas	3	3		X		3	2
California	94	49		X		94	(NA)
Colorado	3	3		X		3	2
Connecticut	10	7		X		(NA)	4
Delaware	5	5		X		-	-
District of Columbia	6	10			X	4	-
Florida	64	(UNK)		X		64	7
Georgia	2	2			X	-	2
Hawaii	-	-	(NP)	(NP)	(NP)	-	-
Idaho	2	2		X		2	2
Illinois	19	9		X		9	5
Indiana	21	12			X	21	9
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	6	3		X		6	-
Kentucky	7	7		X		7	3
Louisiana	7	7		X		7	-
Maine	-	-		X		-	-
Maryland	29	15		X		13	4
Massachusetts	16	16		X		16	6
Michigan	29	11		X		25 ^a	2
Minnesota	4	3			X	4	-
Mississippi	7	7		X		7	3
Missouri	8	6		X		8	-
Montana	-	1		X		1	-
Nebraska	4	4		X		2	-
Nevada	5	4			X	(NA)	-
New Hampshire	(NA)	(NA)	(NR)	(NR)	(NR)	(NA)	(NA)
New Jersey	18	18		X		18	9
New Mexico	2	2			X	2	-
New York	71	(NA)		X		70	20 ^b
North Carolina	8	4		X		5	-
North Dakota	-	-			X	-	-
Ohio	24	7			X	24	-
Oklahoma	10	9		X		8	-
Oregon	3	3		X		3	-
Pennsylvania	62	31			X	34	11
Rhode Island	3	3			X	3	-
South Carolina	24	4		X		18	-
South Dakota	-	-	(NP)	(NP)	(NP)	-	-
Tennessee	4	4		X		4	-
Texas	80	(UNK)			X	(NA)	5
Utah	14	(UNK)	X			-	1
Vermont	(UNK)	(UNK)		(NP)		(NR)	(NR)
Virginia	6	4	X			-	-
Washington	21	6		X		21	1
West Virginia	4	4		X		4	1
Wisconsin	11	7		X		5	-
Wyoming	1	1	(NP)	(NP)	(NP)	(NP)	-
Puerto Rico	1	1	X			-	-
Virgin Islands	-	-		(NP)		-	-

-Represents zero. NP No program. NA Not available. UNK Unknown. NR Not Reported.

^aDoes not include Detroit.

^bIncludes data from New York City and New York Labor Department only.

Radioactive Materials

During fiscal year 1969, Idaho entered into an agreement with the Atomic Energy Commission raising the number of agreement States to 19*. There were 7,143 agreement State licenses for byproduct, source, and special nuclear material as of June 30, 1969. This represents 43 percent of all licenses for such materials. The 19 agreement States made 3,347 inspections of "agreement material" during the fiscal year. Thirty-one States reported 366 joint Atomic Energy Commission-State inspections of Atomic Energy Commission licensed material while 14 States made 398 State-only inspections (table 26).

Twenty-two States reported 61 incidents involving radium or radon during fiscal year 1969. Of these incidents 58 investigations were conducted (table 27).

Forty-eight States reported that 3,727 facilities using radium and/or radon had been licensed or registered. At least 1,147 initial and re-inspections and 184 followup inspections were made of these facilities while at least 482 were brought up to full or partial compliance with minimum State requirements. These totals do not include States which do not keep or could not report such data (table 28).

*As of June 30, 1970, there are 22 agreement States--North Dakota, South Carolina, and Georgia entered into agreements with Atomic Energy Commission during fiscal year 1970.

Table 26. - State Activities Related to the Control of Byproduct,
Source, and Special Nuclear Materials, Fiscal Year 1969

State	AEC Licensed Materials			Agreement State Licensed Materials	
	Number of Licenses	Number of Inspections		Number of Licenses	Number of Inspections
		Joint AEC-State	State (only)		
Total	9,338	366	398	7,143	3,347
Alabama*	36	-	-	^a 235	158
Alaska	22	4	-		
Arizona*	14	-	-	147	76
Arkansas*	5	1	-	214	65
California*	179	(NA)	(NA)	1,151	^b 994
Colorado*	46	2	-	^a 210	34
Connecticut	240	(NA)	(NA)		
Delaware	54	-	1		
District of Columbia	223	10	12		
Florida*	43	-	2	561	166
Georgia	275	36	-		
Hawaii	79	22	-	^a ^c 57	(NR)
Idaho*	2	-	-		
Illinois	757	12	80		
Indiana	290	19	-		
Iowa	^c 135	-	-		
Kansas*	15	5	74	157	65
Kentucky*	14	-	-	^a 165	51
Louisiana*	24	-	-	^a 224	109
Maine	70	-	2		
Maryland	331	8	2		
Massachusetts	560	49	89		
Michigan	486	4	54		
Minnesota	274	-	-		
Mississippi*	10	-	-	147	116
Missouri	300	-	-		
Montana	60	-	-		
Nebraska*	5	1	-	60	39
Nevada	57	3	-		
New Hampshire*	6	-	-	^c 78	(NR)
New Jersey	683	41	11		
New Mexico	158	12	-		
New York*	333	6	-	1,772	708
North Carolina*	15	-	-	237	80
North Dakota	38	-	-		
Ohio	745	-	-		
Oklahoma	237	-	28		
Oregon*	8	4	-	207	46
Pennsylvania	1,085	^d 14	^d 40		
Rhode Island	52	-	2		
South Carolina	167	15	-		
South Dakota	40	14	1		
Tennessee*	18	2	-	275	91
Texas*	176	5	-	1,005	429
Utah	100	12	-		
Vermont	36	2	-		
Virginia	316	38	-	241	120
Washington*	24	1	-		
West Virginia	163	12	-		
Wisconsin	251	-	-		
Wyoming	45	3	-		
Puerto Rico	33	6	-		
Virgin Islands	3	3	-		

^aIncludes all radioactive material.

^bIncludes precicensing inspections.

^cAs reported in AEC Calendar Exchange of Information, June 30, 1969.

^dPhiladelphia, Pennsylvania, only.

*Agreement State.

NA Not available.

-Represents zero.

NR Not Reported.

Table 27. - Reported Incidents and Investigations Involving Radium or Radon,
Fiscal Year 1969

State	Number of Reported Incidents	Number Inves- tigated	State	Number of Reported Incidents	Number Inves- tigated
Total	61	58			
Alabama	1	1	Nebraska	1	1
Alaska	-	-	Nevada	-	-
Arizona	1	1	New Hampshire	(NR)	(NR)
Arkansas	-	-	New Jersey	2	2
California	11	11	New Mexico	-	-
Colorado	-	1	New York	5	5
Connecticut	-	-	North Carolina	2	2
Delaware	-	-	North Dakota	-	-
D.C.	-	-	Ohio	-	-
Florida	-	-	Oklahoma	-	-
Georgia	2	2	Oregon	-	2
Hawaii	-	-	Pennsylvania	6	6
Idaho	-	-	Rhode Island	-	-
Illinois	4	1	South Carolina	1	1
Indiana	2	2	South Dakota	1	1
Iowa	(NR)	(NR)	Tennessee	2	-
Kansas	-	-	Texas	10	10
Kentucky	2	2	Utah	-	-
Louisiana	1	1	Vermont	-	-
Maine	-	-	Virginia	2	2
Maryland	1	1	Washington	1	-
Massachusetts	-	-	West Virginia	-	-
Michigan	2	2	Wisconsin	-	-
Minnesota	1	1	Wyoming	-	-
Mississippi	-	-	Puerto Rico	-	-
Missouri	-	-	Virgin Islands	-	-
Montana	-	-			

- Represents zero.

NR Not Reported.

Table 28. - State Activities Related to the Control of Radium and Radon, Fiscal Year 1969

State	Type of Program	Number of Facilities				Initial and Reinspection-Fiscal Year 1969							
						Total		Medical		Industrial		Other	
		Total	Med.	Ind.	Other	Initial	Reinspection	Initial	Reinspection	Initial	Reinspection	Initial	Reinspection
Total		3,727	2,287	1,079	361	^a 484	^a 663	^a 351	477	69	172	^a 64	^a 14
Alabama	Lic.	56	34	19	3	5	35	5	26	-	7	-	2
Alaska	(NP)	2	2	-	-	-	-	-	-	-	-	-	-
Arizona	Lic.	5	5	-	-	3	1	3	1	-	-	-	-
Arkansas	Lic.	48	34	12	2	-	42	-	34	^a 98	^a 6	^a 32	^a 64
California	Lic./Reg.	277	136	98	43	^a 163	^a 324	^a 33	^a 66	-	194	-	-
Colorado	Lic.	(NA)	(NA)	(NA)	(NA)	33	1	10	-	6	1	17	-
Connecticut	Reg.	51	19	32	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Delaware	Reg.	10	1	4	5	-	2	-	-	-	-	-	2
D.C.	Reg.	17	14	2	1	-	10	-	10	-	-	-	-
Florida	Lic.	46	38	7	1	4	5	2	2	-	1	2	2
Georgia	Reg.	42	40	2	-	-	38	-	38	-	-	-	-
Hawaii	Reg.	2	2	-	-	-	-	-	-	-	-	-	-
Idaho	Lic.	21	21	-	-	11	1	4	-	4	1	3	-
Illinois	Reg.	295	193	90	7	31	27	25	26	5	1	1	-
Indiana	Reg.	95	52	31	12	-	21	-	10	-	10	-	1
Iowa	(NP)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	Lic.	25	14	10	1	3	5	2	1	1	4	-	-
Kentucky	Lic.	44	31	11	2	3	17	2	14	1	3	-	-
Louisiana	Lic.	^b 59	39	20	-	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Maine	Reg.	21	19	-	2	19	2	19	2	-	-	-	-
Maryland	Reg.	51	37	8	6	10	10	6	10	2	-	2	-
Massachusetts	Reg.	174	110	64	-	72	23	72	-	-	23	-	-
Michigan	Reg.	171	77	33	61	30	9	23	8	5	-	2	1
Minnesota	Reg.	37	27	9	1	-	3	-	3	-	-	-	-
Mississippi	Lic.	58	34	19	5	7	30	1	20	2	8	4	2
Missouri	Reg.	24	16	5	3	-	-	-	-	-	-	-	-
Montana	Reg.	(UNK)	(UNK)	(UNK)	(UNK)	-	-	-	-	-	-	-	-
Nebraska	Reg.	31	25	2	4	30	2	24	2	2	-	4	-
Nevada	Reg.	8	4	3	1	-	-	-	-	-	-	-	-
New Hampshire	Lic.	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	Lic.	119	67	49	3	13	77	5	54	7	23	1	-
New Mexico	Reg.	26	11	13	2	-	1	-	-	-	1	-	-
New York	Reg./Lic.	462	348	80	34	^c 76	^c 164	^c 50	^c 147	^c 20	^c 17	^c 6	-
North Carolina	Lic.	77	47	22	8	15	8	9	4	4	2	2	2
North Dakota	Reg.	8	7	1	-	7	-	7	-	-	-	-	-
Ohio	Reg.	225	130	47	48	3	-	3	-	-	-	-	-
Oklahoma	Reg.	114	21	92	1	-	28	-	-	-	28	-	-
Oregon	Lic.	67	65	2	-	-	-	-	-	-	-	-	-
Pennsylvania	Reg.	430	216	148	66	37	87	9	52	8	35	20	-
Rhode Island	Reg.	45	3	40	2	20	-	20	-	-	-	-	-
South Carolina	Lic.	51	35	14	2	2	5	2	4	-	1	-	-
South Dakota	Reg.	24	7	12	5	-	-	-	-	-	-	-	-
Tennessee	Lic.	^d 58	35	16	7	^a 2	^a 9	^a 2	^a 9	^a 20	^a 160	^a 5	^a 67
Texas	Lic.	69	58	7	4	^a 40	^a 389	^a 15	^a 162	-	-	-	-
Utah	(NP)	(UNK)	(UNK)	(UNK)	(UNK)	-	-	-	-	-	-	-	-
Vermont	(NP)	4	2	2	-	1	-	-	-	1	-	-	-
Virginia	(NP)	80	60	20	-	1	-	1	-	-	-	-	-
Washington	Lic.	38	23	12	3	^a 120	^a 1	^a 58	-	^a 43	^a 1	^a 19	-
West Virginia	Reg.	49	32	14	3	-	-	-	-	-	-	-	-
Wisconsin	Reg.	105	85	7	13	46	-	45	-	1	-	-	-
Wyoming	(NP)	(UNK)	(UNK)	(UNK)	(UNK)	-	-	-	-	-	-	-	-
Puerto Rico	Reg.	5	5	-	-	-	-	-	-	-	-	-	-
Virgin Islands	Reg.	1	1	-	-	-	-	-	-	-	-	-	-

^aCalifornia, Texas, and Washington figures include all radioactive materials and are not added into grand totals.

^bEstimated number. State does not separate radium from other licenses.

^cIncludes New York Labor Department and New York City only.

^dNo minimum State requirements.

Table 28. - (Continued)

State	Followup Inspections-Fiscal Year 1969				Facilities Not in Compliance Fiscal Year 1969	Facilities Brought Into Compliance Fiscal Year 1969	
	Total	Medical	Industrial	Other		Full Compliance	Partial Compliance
Total	^a 184	^a 111	^a 67	^a 6	^a 542	^a 244	^a 238
Alabama	-	-	-	-	24	14	10
Alaska	-	-	-	-	-	-	-
Arizona	-	-	-	-	4	2	2
Arkansas	-	-	-	-	(NA)	(NA)	(NA)
California	^a 251	^a 51	^a 151	^a 49	^a 453	^a 453	-
Colorado	-	-	-	-	(NA)	(NA)	(NA)
Connecticut	(NA)	(NA)	(NA)	(NA)	-	-	-
Delaware	2	-	-	2	-	-	-
D.C.	-	-	-	-	3	2	1
Florida	1	-	1	-	4	3	1
Georgia	4	4	-	-	4	4	-
Hawaii	-	-	-	-	-	-	-
Idaho	1	-	1	-	7	7	-
Illinois	26	25	1	-	40	29	11
Indiana	14	9	5	-	13	4	3
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	2	-	2	-	2	2	-
Kentucky	1	-	1	-	8	7	-
Louisiana	7	1	5	1	65	65	-
Maine	-	-	-	-	-	-	-
Maryland	1	1	-	-	10	9	1
Massachusetts	-	-	-	-	-	-	-
Michigan	4	4	-	-	5	2	1
Minnesota	3	3	-	-	-	-	-
Mississippi	1	1	-	-	5	5	-
Missouri	-	-	-	-	-	-	-
Montana	-	-	-	-	-	-	-
Nebraska	3	2	-	1	21	11	9
Nevada	-	-	-	-	-	-	-
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	(NA)	(NA)	(NA)	(NA)	-	-	-
New Mexico	-	-	-	-	-	-	-
New York	^c 56	^c 36	^c 18	^c 2	^c 208	^c 28	^c 191
North Carolina	-	-	-	-	18	18	-
North Dakota	-	-	-	-	7	-	-
Ohio	-	-	-	-	(d)	(d)	-
Oklahoma	28	-	28	-	-	-	-
Oregon	-	-	-	-	-	-	-
Pennsylvania	25	21	4	-	^e 31	^e 13	^e 7
Rhode Island	-	-	-	-	3	3	-
South Carolina	-	-	-	-	2	-	-
South Dakota	-	-	-	-	-	-	-
Tennessee	1	1	-	-	11	10	1
Texas	^a 12	^a 3	^a 8	^a 1	^a 243	^a 243	-
Utah	-	-	-	-	-	-	-
Vermont	1	-	1	-	1	1	-
Virginia	-	-	-	-	1	-	-
Washington	^a 1	-	-	^a 1	^a 33	^a 32	^a 1
West Virginia	-	-	-	-	-	-	-
Wisconsin	2	2	-	-	44	5	-
Wyoming	-	-	-	-	-	-	-
Puerto Rico	1	1	-	-	1	-	-
Virgin Islands	-	-	-	-	-	-	-

^aPhiladelphia, Pennsylvania, only.^bFacilities licensed with radium only. Facilities licensed with radium plus other radioisotopes are not included.

-Represents zero.

NP No program.

NA Not available.

NR Not reported.

UNK Unknown.

**Nuclear Reactors, Fuel Reprocessing Plants and Radioactive Waste Disposal
(January 1969 to February 1970)**

Nuclear reactors are licensed by the Atomic Energy Commission. As of February 1, 1970, there were 266 stationary reactors of all types planned, under construction, or in operation in the United States (table 29). The number of applications submitted during 1969 to the Atomic Energy Commission to construct nuclear power plants was the same as that for the previous year. Thirteen applications were filed with the Commission with a total design electrical output of 11,081 MWe, as compared with the total output of 10,880 MWe of the thirteen applications filed in 1968.

General Electric is continuing construction of its Midwest Fuel Reprocessing Plant near Morris, Illinois. Upon completion, this will be the second commercial plant in operation, the first being Nuclear Fuel Services located at West Valley, New York. The plant is being built on a 1,300-acre tract just south of the Dresden Nuclear Power Station. Commercial operation of the plant, originally scheduled for mid-1970, has been delayed, and is now not expected before late 1970. A third fuel reprocessing plant has been proposed, the application being submitted by Allied Chemical Corporation. The proposed site is in Barnwell County, South Carolina, on a 1,730-acre site which is presently part of the Atomic Energy Commission's Savannah River Plant Reservation. The plant, to be known as the Barnwell Nuclear Fuel Plant, is expected to go into commercial operation during 1973.

Commercial burial sites for low level radioactive waste are located in Richland, Washington; Beatty, Nevada; Sheffield, Illinois; Morehead, Kentucky; and West Valley, New York.

Table 29. - Nuclear Reactors Being Built, Planned, or Operable by State
February 1, 1970

State	Total ^a	Power Reactors		All Other Reactors	
		Operable	Being Built or Planned	Operable	Being Built or Planned
Total	266	17	83	147	19
Alabama	4		4		
Alaska	1			1	
Arizona	1			1	
Arkansas	3		1	1	1
California	26	2	5	18	1
Colorado	5		1	2	2
Connecticut	4	2	1	1	
Delaware	1			1	
District of Columbia	3			3	
Florida	5		4	1	
Georgia	4		1	3	
Hawaii					
Idaho	14			12	2
Illinois	14	1	6	7	
Indiana	2		1	1	
Iowa	3		1	2	
Kansas	2			2	
Kentucky					
Louisiana					
Maine	1		1		
Maryland	7		2	5	
Massachusetts	6	1	1	3	1
Michigan	12	2	6	3	1
Minnesota	4	1	3		
Mississippi	1				1
Missouri	2			2	
Montana					
Nebraska	3		2	1	
Nevada	6			2	4
New Hampshire					
New Jersey	7	1	5	1	
New Mexico	8			8	
New York	32	3	11	14	4
North Carolina	4		2	1	1
North Dakota					
Ohio	8		3	5	
Oklahoma	2			2	
Oregon	4		1	3	
Pennsylvania	11	2	7	2	
Rhode Island	1			1	
South Carolina	11		4	7	
South Dakota					
Tennessee	8		2	6	
Texas	5			5	
Utah	2			2	
Vermont	1		1		
Virginia	9		4	5	
Washington	10	1		8	1
West Virginia	1			1	
Wisconsin	5	1	3	1	
Wyoming	1			1	
Puerto Rico	2			2	
Virgin Islands					

^aExcludes reactors for export, those which are shutdown or dismantled, and reactors on ships.

APPENDIX A

Table 1. - Total Expenditures^a for State and Local Radiological Health Activities by Program Area and State, Fiscal Year 1969

State	Total ^b	Basic Planning and Administration	X-ray Survey and Control	Environmental Surveillance	Radioactive Materials	Electronic Products	Other Radiological Health Activities
Total	\$7,049.9	\$1,284.5	\$2,365.4	\$1,509.0	\$1,368.6	\$290.4	\$232.0
Alabama	157.1	23.6	50.4	32.3	38.7	4.1	8.0
Alaska	6.0	2.4	1.2	1.2	.3	.6	.3
Arizona	63.0	17.5	20.7	-	24.3	.5	-
Arkansas	120.1	12.0	54.1	24.0	24.0	6.0	-
California	1,248.9	112.4	449.7	387.1	299.7	(d)	-
Colorado	94.2	23.6	4.7	33.0	23.5	4.7	4.7
Connecticut	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Delaware	32.2	4.5	10.7	10.6	1.6	3.2	1.6
District of Columbia	71.6	31.6	21.5	9.3	2.1	5.0	2.1
Florida	127.1	25.4	25.4	25.4	31.8	12.7	6.4
Georgia	161.2	32.2	48.3	16.1	48.4	8.1	8.1
Hawaii	41.3	4.5	8.7	15.7	1.2	11.2	-
Idaho	32.6	4.9	9.8	1.6	15.7	.3	.3
Illinois	242.0	60.5	121.0	12.1	24.2	24.2	-
Indiana	70.5	12.7	28.3	19.0	5.6	-	4.9
Iowa	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Kansas	94.7	14.2	28.4	9.5	23.7	4.7	14.2
Kentucky	108.6	27.2	32.6	21.7	21.7	5.4	-
Louisiana	161.3	33.8	47.2	26.3	40.5	-	13.5
Maine	31.9	10.6	15.3	5.0	1.0	-	-
Maryland	145.0	17.4	40.7	58.0	21.7	7.2	-
Massachusetts	190.0	62.7	82.6	19.0	9.5	9.5	6.7
Michigan	180.7	28.3	90.4	21.2	11.7	14.8	14.3
Minnesota	62.0	12.4	29.8	13.6	1.9	1.2	3.1
Mississippi	52.9	13.2	15.9	.5	15.9	2.1	5.3
Missouri	94.2	37.7	37.7	4.7	4.7	.9	8.5
Montana	3.8	2.2	.8	.2	.6	-	-
Nebraska	51.2	5.6	15.4	4.6	17.9	1.0	6.7
Nevada	4.0	2.5	.5	.5	.2	.3	-
New Hampshire	33.5	7.5	11.0	6.0	8.0	1.0	-
New Jersey	254.1	50.8	50.9	50.8	50.8	38.1	12.7
New Mexico	35.4	10.6	13.2	3.5	7.1	1.0	-
New York	1,350.4	222.1	469.9	329.9	221.4	72.7	34.4
North Carolina	117.3	18.8	32.7	27.0	23.5	1.2	14.1
North Dakota	36.0	6.5	10.8	9.8	8.1	.8	-
Ohio	149.9	37.5	67.4	22.5	7.5	7.5	7.5
Oklahoma	55.5	27.6	5.6	13.9	5.6	2.8	-
Oregon	96.9	17.7	21.3	26.0	31.9	-	-
Pennsylvania	249.4	49.8	86.0	49.8	51.0	9.0	3.8
Rhode Island	66.7	19.3	24.7	14.7	2.0	3.3	2.7
South Carolina	72.0	14.4	10.8	36.8	8.6	-	1.4
South Dakota	16.0	5.6	7.2	.8	1.6	.3	.5
Tennessee	76.9	13.1	25.4	2.3	34.5	.8	.8
Texas	244.5	24.5	24.4	24.4	146.8	2.4	22.0
Utah	30.4	20.1	3.0	5.2	.9	.6	.6
Vermont	39.8	11.9	19.1	4.0	2.0	.8	2.0
Virginia	65.5	13.1	19.5	16.4	6.6	3.3	6.6
Washington	166.4	25.0	49.9	46.6	33.3	3.3	8.3
West Virginia	38.0	3.8	20.1	9.5	1.9	2.3	.4
Wisconsin	112.0	16.8	78.5	12.3	1.1	1.1	2.2
Wyoming	27.6	11.1	5.5	8.3	.8	1.9	-
Puerto Rico	65.3	19.6	16.3	16.3	1.3	8.5	3.3
Virgin Islands	2.3	1.7	.4	-	.2	-	-

^a Includes Federal funds. ^b Excludes Connecticut and Iowa. ^c Does not include additional funds used to operate civil defense laboratory and maintain an emergency civil defense program. ^d An estimated 5% of total funds was spent on electronic products and is included in x-ray survey and control category. NA Not available. NR Not reported.

Table 2. - Distribution of State and Local Radiological Health Personnel^a by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	389	325	64		43	13	263	20	83	7	221	
Alabama	10	8	3		2		7	1	3	2		
Alaska	-	-										
Arizona	3	-			1		2					
Arkansas	12	2			2		5		5	1	1	
California	49	4	1		2		36	2	11		1	
Colorado	8	7	1		1		5	2	2		4	
Connecticut	5	10	2		1		2	2	2		6	
Delaware	2	-			1		1					
District of Columbia	3	5	2		1		2				3	
Florida	12	17	2		1		7	2	4		13	
Georgia	10	1	1		1		7		2			
Hawaii	2	4	1			1	2				2	
Idaho	2	-			1		1					
Illinois	13	9	1		1		3		9		8	
Indiana	5	4	2		1		4				2	
Iowa	(NR)	(NR)										
Kansas	4	5	2		1		3		1		2	
Kentucky	7	1			2		4		1		1	
Louisiana	7	-			1		6					
Maine	1	5	2			1	1	1			1	
Maryland	8	1	1		1		6		1			
Massachusetts	9	10	5		1		5		3		5	
Michigan	6	21	2		2		4				19	
Minnesota	4	7	3		1		3	1			3	
Mississippi	4	1	1		2		2					
Missouri	4	6	3		1		3				3	
Montana	-	1	1									
Nebraska	4	2	2		1		2		1		4	
Nevada	-	5	1								4	
New Hampshire	3	2					3				2	
New Jersey	17	-			1		11		5			
New Mexico	3	6	1				2		1		5	
New York	88	89	4		6		61		21		85	
North Carolina	9	5	1		1		3		5		4	
North Dakota	1	4	2			1	1	1				
Ohio	4	23	1				2	1	1		21	
Oklahoma	4	3	1			1	4		1			
Oregon	6	-			1		5					
Pennsylvania	18	9	1		1	1	14	1	3	1	5	
Rhode Island	-	7	1			1	2				3	
South Carolina	4	3	1			1	2		2	1		
South Dakota	-	3	2			1						
Tennessee	4	4	1		1		3				3	
Texas	10	1	1		1		8		1			
Utah	1	9	2			1	1				6	
Vermont	1	3	1				1				2	
Virginia	3	6	1				3	2			3	
Washington	6	6	1		1	1	5	1			3	
West Virginia	2	2				1	2				1	
Wisconsin	5	-			1		4					
Wyoming	-	2	1				1					
Puerto Rico	6	1	1		1		5					
Virgin Islands	-	1	1									

^aExcludes Public Health Service personnel on loan to States.
^bExcludes Iowa.

-Represents zero.
 NR Not reported.

Table 3. - Radiological Health Personnel^a Man Equivalence by Program
Area and State, Fiscal Year 1969

State	Total ^b	Basic Planning and Administration		X-ray Survey and Control		Environmental Surveillance		Radioactive Materials		Electronic Products		Other Radiological Health Activities	
		Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	447.9	49.0	15.5	141.6	19.6	93.9	16.7	76.3	2.9	9.1	2.1	19.3	1.9
Alabama	11.6	.50	.55	4.15	.42	2.90	.33	2.05	.10	.15	.10	.25	.10
Alaska	-	-	-	1.00	-	-	-	1.40	-	-	-	-	-
Arizona	3.0	.60	-	1.00	-	1.15	.65	6.95	-	.10	-	-	-
Arkansas	12.6	1.95	-	1.85	-	-	-	-	-	-	-	-	-
California	50.3	3.20	.05	19.90	.08	10.25	1.00	15.75	.02	.05	-	.05	-
Colorado	9.6	.90	.65	2.30	.60	1.85	.40	.95	-	.30	-	1.70	-
Connecticut	7.4	.40	.55	2.15	.05	1.85	1.70	.30	.05	.05	.05	.25	-
Delaware	2.0	.40	-	.35	-	.10	-	.95	-	.05	-	.15	-
District of Columbia	3.9	1.40	.10	.80	.25	-	-	.33	-	.22	.55	.25	-
Florida	14.9	1.61	.30	3.02	.95	4.08	1.00	2.31	.30	.15	.20	.83	.15
Georgia	10.1	1.50	.10	3.64	-	2.00	-	2.75	-	.11	-	-	-
Hawaii	2.9	-	.40	.75	.03	1.05	.32	.05	.04	.15	.13	-	-
Idaho	2.0	.40	-	.75	-	.35	-	.25	-	.10	-	.15	-
Illinois	13.9	2.30	.80	8.88	-	.18	.08	1.32	.02	.32	-	-	-
Indiana	5.5	.52	.35	2.20	.07	1.50	-	.30	.05	.02	-	.46	-
Iowa ^c	-	-	-	-	-	-	-	-	-	-	-	-	-
Kansas	5.1	.90	.40	.88	.66	.76	-	1.10	-	.12	.05	.24	.03
Kentucky	7.3	1.25	-	3.35	.25	1.10	-	1.15	-	.15	-	-	-
Louisiana	7.0	.90	-	2.55	-	2.00	-	1.25	-	-	-	.30	-
Maine	2.3	-	.20	.95	.25	-	.55	-	.20	-	-	.05	.05
Maryland	8.1	1.10	.10	3.20	-	2.45	-	.95	-	.25	-	.05	-
Massachusetts	10.7	.50	.85	4.10	-	3.10	.90	1.10	-	.10	-	.10	-
Michigan	8.0	.45	.32	3.65	.10	1.20	.43	.55	.09	.05	.68	.10	.38
Minnesota	5.4	.55	.25	3.10	.25	.15	.90	.10	-	.05	-	.05	-
Mississippi	4.0	.85	.02	1.25	-	.13	-	1.45	-	.03	-	.29	-
Missouri	4.9	.85	.35	2.05	.30	.20	.25	.40	-	.05	-	.45	-
Montana ^d	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebraska	4.1	.75	.02	.70	-	.20	-	1.75	-	.13	-	.47	.05
Nevada	.1	-	.06	-	.02	-	.03	-	.01	-	.02	-	-
New Hampshire	3.4	-	.33	1.10	-	1.05	.10	.70	-	.15	-	-	-
New Jersey	17.0	1.65	-	4.85	-	5.15	-	2.35	-	1.35	-	1.65	-
New Mexico	3.4	.90	.25	.10	.01	.95	.05	-	.05	-	.01	1.05	.03
New York	98.6	10.05	.70	30.50	8.20	29.95	.65	10.95	1.05	2.00	-	4.55	-
North Carolina	9.6	.70	.30	2.50	-	2.25	.30	1.35	-	.20	-	2.00	-
North Dakota	2.5	.05	.41	.03	.10	.75	.58	.10	.30	.02	.01	.05	.10
Ohio	9.4	.90	.65	.90	4.50	1.70	.20	.20	-	.15	-	.15	-
Oklahoma	5.3	2.05	.70	.65	-	.60	.50	.60	-	.10	.05	-	-
Oregon	6.0	1.00	-	1.20	-	2.00	-	1.80	-	-	-	-	-
Pennsylvania	21.0	2.00	.80	6.40	.31	4.45	.93	3.10	.26	1.55	-	.55	.65
Rhode Island	2.7	-	.80	-	.70	-	.92	-	.08	-	.12	-	.10
South Carolina	5.4	.50	.50	1.35	.78	1.64	.10	.50	.02	.01	-	-	-
South Dakota	.8	-	.67	-	.08	-	.02	-	.04	-	.02	-	.01
Tennessee	4.1	.51	.10	1.02	.02	.12	-	1.10	.01	.01	-	1.24	-
Texas	10.3	1.40	.33	1.20	-	.57	-	5.80	-	.10	-	.93	-
Utah	2.0	.25	.28	-	.15	.75	.49	-	-	-	.02	-	.03
Vermont	1.8	.35	.33	.40	-	-	.43	.08	-	.07	-	.10	-
Virginia	4.8	.20	.48	1.20	.25	1.20	.68	.10	.11	.10	.08	.20	.16
Washington	7.7	.75	-	3.27	-	.02	1.65	1.83	-	.06	-	.07	-
West Virginia	2.8	.10	.65	1.40	-	.20	.08	.10	-	.15	-	.05	.02
Wisconsin	5.0	.50	-	3.15	-	1.25	-	-	-	.01	-	.09	-
Wyoming	1.2	-	.45	-	.20	-	.45	-	.05	-	-	-	.05
Puerto Rico	6.3	1.35	.30	2.87	-	.77	-	.16	-	.40	-	.45	-
Virgin Islands	.1	-	.06	-	.02	-	-	-	.01	-	-	-	.01

^aExcludes Public Health Service personnel on loan to States. ^bExcludes Iowa. ^cNo report received.
^dThe man-equivalence for one person working in the radiological health program amounts to one percent of one man year.
 -Represents zero.

Table 4. - Distribution of Radiological Health Personnel^a Earning Under \$5,000 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	5	5					3		2	3		2
Alabama		2								2		
Alaska												
Arizona												
Arkansas												
California												
Colorado												
Connecticut												
Delaware												
District of Columbia												
Florida												
Georgia												
Hawaii												
Idaho												
Illinois												
Indiana												
Iowa ^c												
Kansas												
Kentucky		1										1
Louisiana												
Maine												
Maryland												
Massachusetts												
Michigan												
Minnesota												
Mississippi												
Missouri												
Montana												
Nebraska												
Nevada												
New Hampshire												
New Jersey												
New Mexico												
New York									1			
North Carolina	1											
North Dakota												
Ohio												
Oklahoma		1								1		
Oregon												
Pennsylvania												
Rhode Island		1										1
South Carolina	1								1			
South Dakota												
Tennessee												
Texas												
Utah												
Vermont												
Virginia												
Washington												
West Virginia												
Wisconsin												
Wyoming												
Puerto Rico	3						3					
Virgin Islands												

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 5. - Distribution of Radiological Health Personnel^a Earning \$5,000 to \$6,999 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	45	8			1		10	1	34	2	5	
Alabama	2								2			
Alaska												
Arizona												
Arkansas	6						2		4			
California	2								2			
Colorado												
Connecticut												
Delaware												
District of Columbia		3									3	
Florida	1								1			
Georgia	2								2			
Hawaii												
Idaho												
Illinois	5								5			
Indiana												
Iowa ^c												
Kansas		2							1		1	
Kentucky												
Louisiana												
Maine												
Maryland	1								1			
Massachusetts												
Michigan												
Minnesota	1	1					1				1	
Mississippi												
Missouri												
Montana												
Nebraska												
Nevada												
New Hampshire	1						1					
New Jersey												
New Mexico	2						1		1			
New York	12								12			
North Carolina	1								1			
North Dakota		1						1				
Ohio												
Oklahoma	1						1					
Oregon												
Pennsylvania	2								2			
Rhode Island												
South Carolina		1								1		
South Dakota												
Tennessee												
Texas	3						2		1			
Utah												
Vermont												
Virginia												
Washington												
West Virginia												
Wisconsin												
Wyoming												
Puerto Rico	3				1		2					
Virgin Islands												

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 6. - Distribution of Radiological Health Personnel^a Earning \$7,000 to \$8,999 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	74	18					42	2	32	1		15
Alabama	5	1					4	1	1			
Alaska							1					
Arizona	1						2		1		1	
Arkansas	3	1										
California									2			
Colorado	2											
Connecticut	1						1					
Delaware												
District of Columbia							1		3		4	
Florida	4	4										
Georgia												
Hawaii	2	1					2				1	
Idaho	1						1					
Illinois	3								3			
Indiana												
Iowa ^c												
Kansas									1			
Kentucky	2						1					
Louisiana	3						3					
Maine	1						1					
Maryland									1			
Massachusetts	1											
Michigan											1	
Minnesota	2	1					2					
Mississippi												
Missouri	2						2					
Montana									1			
Nebraska	1											
Nevada												
New Hampshire												
New Jersey	4								4			
New Mexico		1									1	
New York	12						3		9			
North Carolina	5						2		3			
North Dakota												
Ohio	2						1		1			
Oklahoma	1						1					
Oregon												
Pennsylvania	8	3					7	1	1	1	1	
Rhode Island												
South Carolina	2						1		1			
South Dakota												
Tennessee												
Texas	3						3				4	
Utah		4										
Vermont		1									1	
Virginia												
Washington												
West Virginia	2	1					2				1	
Wisconsin	1						1					
Wyoming												
Puerto Rico												
Virgin Islands												

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 7. - Distribution of Radiological Health Personnel^a Earning \$9,000 to \$10,999 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	119	33			3	2	104	7	12			24
Alabama	3						3					
Alaska	1						1					
Arizona	2				1		1					
Arkansas	16						7		9			
California	4						4					
Colorado	1				1							
Connecticut												
Delaware	3	4					3	1			3	
District of Columbia	4						4				1	
Florida	3											
Georgia	4											
Hawaii		1										
Idaho	3						2		1			
Illinois	2						2					
Indiana												
Iowa ^c	3	1					3				1	
Kansas	2						2					
Kentucky	2						2					
Louisiana		1						1				
Maine	4						4					
Maryland	3	1					2		1		1	
Massachusetts	2	5					2				5	
Michigan	3				1		2					
Minnesota	1	1					1				1	
Mississippi	1						1					
Missouri	1						1					
Montana	1						1					
Nebraska		1									1	
Nevada	2	1					2				1	
New Hampshire	5						4		1			
New Jersey	1	2					1				2	
New Mexico	29						29				1	
New York		1										
North Carolina	1						1					
North Dakota	2						2					
Ohio	3						3					
Oklahoma	4						4					
Oregon	3	2					3				2	
Pennsylvania		1						1				
Rhode Island	1						1					
South Carolina	1						1					
South Dakota	1						1					
Tennessee	2						2					
Texas		1									1	
Utah	3	4					3	2			2	
Vermont	4	4				1	4	1			2	
Virginia		1				1						
Washington	1						1					
West Virginia												
Wisconsin		1										
Wyoming												
Puerto Rico												
Virgin Islands												

^aExcludes Public Health Service Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 8. - Distribution of Radiological Health Personnel^a Earning \$11,000 to \$12,999 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	68	36		1	11	5	56	4	1			26
Alabama		1				1						
Alaska												
Arizona	1				1							
Arkansas												
California	19						19					
Colorado	1				1							
Connecticut												
Delaware												
District of Columbia	1						1					
Florida		3						1				2
Georgia	3						3					
Hawaii		1				1						
Idaho	1				1							
Illinois	1				1							
Indiana	1						1					
Iowa ^c												
Kansas	1				1							
Kentucky	2				1		1					
Louisiana	1						1					
Maine		2				1						1
Maryland												
Massachusetts	4	3					3		1			3
Michigan	1	9					1					9
Minnesota	1	1			1			1				
Mississippi	1				1							
Missouri		2										2
Montana												
Nebraska	1				1							
Nevada		2										2
New Hampshire												
New Jersey	4						4					
New Mexico		3		1								2
New York	8						8					
North Carolina	2	1			1		1					1
North Dakota		1				1						
Ohio	1	1					1	1				
Oklahoma		1				1						
Oregon	2				1		1					
Pennsylvania	4						4					
Rhode Island		2						1				1
South Carolina												
South Dakota												
Tennessee	1	1					1					1
Texas	1						1					
Utah	1	1					1					1
Vermont	1	1					1					1
Virginia												
Washington	1						1					
West Virginia												
Wisconsin	2						2					
Wyoming												
Puerto Rico												
Virgin Islands												

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 9. - Distribution of Radiological Health Personnel^a Earning \$13,000 to \$14,999 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	31	25	10		5	3	26				12	
Alabama		1	1									
Alaska												
Arizona												
Arkansas	1				1							
California	8	1	1				8					
Colorado		1	1									
Connecticut												
Delaware												
District of Columbia	1						1					
Florida	1						1					
Georgia												
Hawaii												
Idaho												
Illinois		1									1	
Indiana	2	1			1		1				1	
Iowa ^c												
Kansas		1	1									
Kentucky												
Louisiana												
Maine		1	1									
Maryland	2						2					
Massachusetts		1									1	
Michigan	1	2					1				2	
Minnesota												
Mississippi												
Missouri		1	1									
Montana												
Nebraska	1	1	1				1					
Nevada												
New Hampshire		1									1	
New Jersey	2						2					
New Mexico												
New York	9	2			1		8				2	
North Carolina		1									1	
North Dakota												
Ohio												
Oklahoma												
Oregon												
Pennsylvania												
Rhode Island												
South Carolina		1					1					
South Dakota		1					1					
Tennessee	2	3	1		1		1				2	
Texas												
Utah		1					1					
Vermont		1	1									
Virginia		1									1	
Washington	1				1							
West Virginia												
Wisconsin												
Wyoming		1	1									
Puerto Rico												
Virgin Islands												

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 10. - Distribution of Radiological Health Personnel^a Earning \$15,000 to \$16,999 by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	15	20		9	9	2	6	1				8
Alabama		1				1						
Alaska												
Arizona												
Arkansas												
California	2	1					2	1				
Colorado												
Connecticut												
Delaware												
District of Columbia												
Florida		2										2
Georgia												
Hawaii		1		1								
Idaho												
Illinois	1	2					1					2
Indiana												
Iowa ^c												
Kansas												
Kentucky	1					1						
Louisiana	1					1						
Maine												
Maryland	1					1						
Massachusetts	1					1						
Michigan	1	2		1		1						1
Minnesota		2		1								1
Mississippi												
Missouri		1		1								
Montana												
Nebraska												
Nevada												
New Hampshire												
New Jersey	2					1		1				
New Mexico												
New York	2							2				
North Carolina		2		1								1
North Dakota												
Ohio	1					1						
Oklahoma												
Oregon												
Pennsylvania	1	1				1	1					
Rhode Island		1										1
South Carolina												
South Dakota		1		1								
Tennessee												
Texas	1					1						
Utah		1		1								
Vermont												
Virginia		1		1								
Washington		1		1								
West Virginia												
Wisconsin												
Wyoming												
Puerto Rico												
Virgin Islands												

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 11. - Distribution of Radiological Health Personnel^a Earning \$17,000 and over by Personnel Category and State, Fiscal Year 1969

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total ^b	16	53		42	13	1	3	1				9
Alabama		2		2								
Alaska												
Arizona												
Arkansas												
California	2	1			2			1				
Colorado												
Connecticut												
Delaware												
District of Columbia	1	2		2	1						2	
Florida	1	4		2	1							
Georgia	1	1		1	1							
Hawaii												
Idaho												
Illinois		6		1							5	
Indiana		3		2							1	
Iowa ^c												
Kansas		1		1								
Kentucky												
Louisiana												
Maine		1		1								
Maryland		1		1								
Massachusetts		5		5								
Michigan	1	1		1	1							
Minnesota		2		2								
Mississippi		1		1								
Missouri	1	1		1	1							
Montana		1		1								
Nebraska		1		1								
Nevada		2		1							1	
New Hampshire												
New Jersey												
New Mexico												
New York	8	4		4	5			3				
North Carolina												
North Dakota		2		2								
Ohio		1		1								
Oklahoma		1		1								
Oregon												
Pennsylvania		1		1								
Rhode Island		2		1		1						
South Carolina		1		1								
South Dakota		1		1								
Tennessee												
Texas		1		1								
Utah		1		1								
Vermont												
Virginia												
Washington												
West Virginia												
Wisconsin	1				1							
Wyoming												
Puerto Rico		1		1								
Virgin Islands		1		1								

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 12. - Distribution of Full-time Radiological Health Directors^a
and Radiological Health Specialists^a by Discipline
and State, Fiscal Year 1969

State	Total	Chemist	Physicist	Engineer	Sanitarian	Biologist	M.D.	D.D.S.	All Other
Total ^b	306	61	107	38	29	20	4	1	46
Alabama	7	3	3						1
Alaska									
Arizona	3		2						1
Arkansas	7	3	2			1			1
California	38	11	9	6	2	4			6
Colorado	6		5	1					
Connecticut	3	1	2						
Delaware	2	1				1			
District of Columbia	3		3						
Florida	8	2	5				1		
Georgia	8	2	2			4			
Hawaii	2	1							1
Idaho	2	1	1						
Illinois	4			3					1
Indiana	5	1	1	1	1				1
Iowa ^c									
Kansas	4	2	1						1
Kentucky	6		6						
Louisiana	7	1	3	1	1				1
Maine	1								1
Maryland	7	3	1			2			1
Massachusetts	6	2	1						3
Michigan	6	1	2	2					1
Minnesota	4		1	1		1		1	
Mississippi	4		2						2
Missouri	4		3				1		
Montana									
Nebraska	3		2		1				
Nevada									
New Hampshire	3	1		1					1
New Jersey	12	1	7	2			1		1
New Mexico	2					1			1
New York	67	8	18	11	24		1		5
North Carolina	4	1	1	1					1
North Dakota	1	1							
Ohio	3	1	1	1					
Oklahoma	4	1	1	2					
Oregon	6	2	3						1
Pennsylvania	15	2	10						3
Rhode Island									
South Carolina	2		1						1
South Dakota									
Tennessee	4	1	3						
Texas	9		1	3		3			2
Utah	1	1							
Vermont	1		1						
Virginia	3	2				1			
Washington	6	1	1	1					3
West Virginia	2			1		1			
Wisconsin	5	2							3
Wyoming									
Puerto Rico	6	1	2			1			2
Virgin Islands									

^aExcludes Public Health Service personnel on loan to States.

^bExcludes Iowa.

^cNo report received.

Table 13. - Type of Surveillance Program Conducted by State Radiation Control Programs, Fiscal Year 1969

State	Type of Program					
	Air	Milk	Water	Diet	Miscellaneous ^a	Nuclear Facilities
Total 53 (100%)	27 (51%)	40 (76%)	44 (83%)	4 (8%)	26 (49%)	11 (21%)
Alabama	X	X	X			
Alaska			X			
Arizona		X	X			
Arkansas	X	X	X	X	X	X
California	X	X				
Colorado	X	X	X	X	X	X
Connecticut		X	X		X	
Delaware		X	X			
District of Columbia						
Florida	X	X	X		X	
Georgia	X		X			
Hawaii	X	X	X			
Idaho	X	X	X			
Illinois	X	X	X	X		
Indiana		X	X			
Iowa	X	X	X		X	
Kansas		X	X		X	
Kentucky	X	X	X		X	
Louisiana		X	X			
Maine		X	X			
Maryland	X	X	X		X	
Massachusetts	X	X	X		X	X
Michigan	X	X	X		X	X
Minnesota	X	X	X			
Mississippi			X			
Missouri			X			
Montana						
Nebraska	X	X	X			
Nevada	X	X			X	
New Hampshire	X	X				
New Jersey		X	X		X	
New Mexico		X	X			
New York	X	X	X		X	X
North Carolina	X	X	X	X	X	
North Dakota	X	X	X			
Ohio		X	X			
Oklahoma		X	X			
Oregon		X	X		X	
Pennsylvania		X	X		X	X
Rhode Island	X		X			
South Carolina	X		X		X	
South Dakota						X
Tennessee		X	X		X	
Texas		X	X		X	
Utah	X	X	X			
Vermont	X	X				
Virginia		X	X		X	X
Washington		X	X		X	
West Virginia						
Wisconsin	X	X	X		X	X
Wyoming			X		X	
Puerto Rico	X	X	X			
Virgin Islands						

^aSoil, sewage, shellfish, vegetation, etc.

X Active program.

APPENDIX B

DEFINITIONS

Agreement materials - Byproduct, source, and special nuclear materials under the jurisdiction of an Agreement State.

Agreement State - A State which has entered into an agreement with the Atomic Energy Commission in which certain of the Commission's responsibility is transferred to the State under the terms of Section 274 of the Atomic Energy Act of 1954.

Combination - Participation in a radiological health program in which both voluntary and regulatory programs are utilized.

Compliance - A state or condition conforming to pertinent recommendations or standards whether or not these standards or recommendations are set up by law or by permissive custom.

Comprehensive Regulations - Health codes similar to, or comparable with, those recommended by the Council of State Governments for the control of radiation sources.

Inspection - A critical observation or examination of the source of ionizing or nonionizing radiation and/or its use and/or its environs to determine compliance.

Man Equivalence - The fractional part, or percent, of a total man-year devoted to activities in radiological health. For example, four full-time people spending 25 percent of their working time in radiological health will be counted as the equivalent of one full-time worker.

Particle Accelerator - A device capable of imparting sufficient kinetic energy to charged particles to produce nuclear reactions.

Personnel

Full-time - Employed on a full-time basis and spending all of their working time in radiological health.

Part-time - Employees who devote a part of an average work day to radiological health. They may be employed by the health agency on either full- or part-time basis.

Program Administrators - These personnel, who may be health commissioners, bureau or division chiefs, spend less than 50 percent of their time in radiological health and are responsible for overall planning or administration of several programs in addition to radiological health.

Personnel (continued)

Radiological Health Directors - These employees spend at least 50 percent of their time in radiological health activities; have moderate to wide experience in public health programming; usually have a physical science, biological or engineering degree; may administer total radiological health program.

Radiological Health Specialists - These employees spend at least 50 percent of their time in radiological health activities; have bachelor's or graduate degree in engineering, biological, or physical sciences; may direct one or more program areas. In some cases, personnel who have had years of public health experience in responsible positions, but do not have college degrees, are classified as specialists.

Radiological Health Technicians - Employees in this category spend at least 50 percent of their time in radiological health activities; have a high school degree; may have college or technical courses.

Supporting Personnel - Professional or semiprofessional specialists who spend less than 50 percent of their time in radiological health and are primarily responsible for certain areas of radiological health activities.

Public Law 90-602 "Radiation Control for Health and Safety Act of 1968" - The purpose of this law (which went into effect October 18, 1968) is to protect the public from unnecessary exposure to harmful radiation emitted from electronic products. The Secretary of Health, Education, and Welfare is to establish an electronic product radiation control program which shall include the development and administration of performance standards to control the emission of electronic product radiation, and the undertaking by public and private organizations of research and investigation into the effects and control of such radiation emissions. Electronic products capable of emitting ionizing or nonionizing electromagnetic or particulate radiation are the objects of the radiation control program. Examples of products included in the control program are microwave ovens, color televisions, x-ray machines, and particle accelerators.

Radium Incident - A radium incident is any loss, theft, source rupture, contamination event, overexposure, source, or contamination find or other unusual occurrences involving radium or radon.

Region and Geographic Locations - The following is the geographic grouping of States used by the Bureau of the Census and many other agencies:

Region	State
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania
North Central	Michigan, Ohio, Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
South	Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas, Puerto Rico, Virgin Islands
West	Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii

Registration - The recording of the existence and/or location of a radiation-producing source under a system of records that identifies the source and is maintained by an appropriate governing body.

Regulatory - Participation in any aspect of a radiological health program in which the power of free choice has been removed by legal authority.

Voluntary - Participation in any aspect of a radiological health program in which the parties involved exercise the power of free choice.

X-ray Machine - Piece of equipment containing one or more x-ray tubes and the necessary appurtenances.

APPENDIX C

QUESTIONNAIRE

HEALTH JURISDICTION _____ Year Ending June 30, 19 _____
(State, County, City, or Other)

ANNUAL REVIEW OF THE RADIOLOGICAL HEALTH PROGRAM

Prepared by: Name _____
Title _____
Date Prepared _____

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Consumer Protection and Environmental Health Service
Environmental Control Administration
Bureau of Radiological Health

Form Approved:
Budget Bureau No. 85-R0103

I.

PURPOSE OF A PROGRAM REVIEW

Periodic reviews of State and local radiological health programs provide information essential in an assessment of the extent of the radiation problem in the Nation. Of equal importance, an inventory of resources available for attacking the problem, i.e., money, personnel, and laboratory equipment, will furnish yardsticks for program planning at State, local, and National levels.

The questionnaires and tabular forms included were designed for the use of program directors at all levels. These guidelines for collecting uniform program data, comparable from year to year, will supply a major portion of the information that is needed in an evaluation of program development as related to the extent of the radiation problem.

GENERAL INSTRUCTIONS

Identify each page by the particular agency involved, the State, and the fiscal year covered. There are two reasons for this: 1) the pages representing different program areas may be used separately, and 2) the possibility of confusion in reassembling the completed document, if separated, will be eliminated. Abbreviations may be used for the agency and State.

Usually the data items requested in the various questionnaires and forms are self-explanatory. Where specific instructions seemed indicated, they were inserted within parenthesis immediately following the item in question. In some instances items were clarified by the use of footnotes. Definitions of terms used throughout the document are contained in Appendix 1. Some of these definitions may appear superfluous; however, it is important that program administrators at all levels of government have a uniform concept of the terminology used.

NOTE: In reproduction of completed forms, this page and the appendices may be deleted.

Agency _____ State _____ June 30, 19 _____

II. PROGRAM TITLE AND OFFICIALS

Name of Program (Official designation) _____

Address _____

Radiological Health Program Director _____ (Name and Title)

Office Telephone _____ Area Code _____

Off-duty Telephone _____ Area Code _____

Alternate Person to Contact _____ (Name and Title)

Office Telephone _____ Area Code _____

Off-duty Telephone _____ Area Code _____

Agency _____ State _____ June 30, 19 _____

III. RESOURCES AVAILABLE DURING FISCAL YEAR

- A. BUDGET FOR RADIOLOGICAL HEALTH (Appropriated or allocated funds): 1. State (or local) \$ _____
2. Federal funds \$ _____

B. PERSONNEL IN RADIOLOGICAL HEALTH ACTIVITIES (At end of fiscal year)

1. Professional and Semiprofessional:

- a. State (or local): Full-time _____ Part-time (Full-time equivalent) _____
b. Public Health Service: State Assignees _____ COSTEP'S _____

2. Nonprofessional: (In total full-time equivalent) _____

- C. *APPROXIMATE VALUE OF TOTAL FUNCTIONAL EQUIPMENT FOR Radiological Health Activities \$ _____. (This total will be cumulative and should include the last fiscal year as shown in Section IV, Item C below.)

IV. ESTIMATED EXPENDITURES DURING FISCAL YEAR

- A. EXPENDITURES BY SOURCE OF FUNDS: (Show only the amount spent. Include salaries, travel expenses, cost of equipment purchased during the report year, funds allocated by State to local programs, and any other.)

1. Appropriated or allocated \$ _____ (Expenditures from funds as shown in Section III, Item A-1 above.)
2. Federal funds \$ _____ (Show only the amount spent.)
3. Supporting services \$ _____ (Count all financial support and personnel services from other programs not included in the total budget shown in Section III above. Salaries, travel, and other expenses should be based on the percent of time spent in radiological health activities.)

4. TOTAL AMOUNT SPENT (Items 1, 2, and 3) \$ _____ (Total expenditures may be more than actual budget.)

- B. DISTRIBUTION OF TOTAL EXPENDITURES BY PROGRAM AREA: (Based on the total amount in Item 4 above. Show dollar amounts if actual budget has been set up by program area; if not, show percent of total amount spent in each program area.)

1. Basic planning and administration \$ _____
2. X-ray survey and control \$ _____
3. Environmental surveillance \$ _____
4. Radioactive materials \$ _____
5. Electronic products \$ _____ (color TV, laser energy, microwaves, etc.)
6. Other radiological health activities \$ _____ (Include only expenditures which cannot be counted in other five items.)

- C. TOTAL COST OF NEW LABORATORY AND FIELD SURVEY EQUIPMENT purchased during the Last Fiscal Year \$ _____.

*Approximate value at time of purchase.

Agency _____ State _____ June 30, 19 _____

V. PERSONNEL IN RADIOLOGICAL HEALTH

A. QUALIFICATIONS AND WORK EXPERIENCE OF PROFESSIONAL AND SEMI-PROFESSIONAL PERSONNEL

(1) Name and Title	(2) Professional Specialty	(3) Degree(s)	(4) Yrs. in Public Health	(5) Annual Salary Range	(6) Percent of Total Time	(7) Radiological Health Category*
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

*See appendix to schedule.

Use continuation sheets if more space is needed.

Agency _____

State _____ June 30, 19 _____

B. TOTAL PERSONNEL INVOLVED IN RADIOLOGICAL HEALTH

Name of Employee (The last name only is sufficient. List professional and semiprofessional in same order as in Table A. List nonprofessional employees last.)	STATE AND/OR LOCAL				USPHS		Percent of Time Spent in Each Program Area					
	Prof. and Semiprof.		Non-prof.		(5) State Assistants	(6) COSTEP	(7) Basic Planning & Admin. (A)	(8) X-ray Survey & Control (B-1)	(9) Environ. Surveil- lance (B-2)	(10) Radio- active Materials (B-3)	(11) Elec- tronic Products (B-4)	(12) Other Rad. Hlth. Activities (B-5)
	(1) Full Time	(2) Part Time	(3) Full Time	(4) Part Time								
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												

Use continuation sheets if more space is needed.

June 30, 19____

C. POSITIONS BUDGETED BUT UNFILLED

Budgeted and funded positions vacant at end of last fiscal year.

VACANT POSITIONS BUDGETED AND FUNDED

[illegible]

*Use the following codes: "A" for Basic Planning and Administration; "B-1" for X-ray Survey and Control; "B-2" for Environmental Surveillance; "B-3" for Radioactive Materials; "B-4" for Electronic Products; "B-5" for Other Radiological Health Activities.

Agency _____ State _____ June 30, 19 _____

VI. X - RAY SURVEY AND CONTROL

A. DENTAL X - RAY PROGRAM (All data requested pertain to jurisdiction of reporting agency.) (Answers should be stated in machines or tubes; both, if possible.)

GENERAL

1. Number of x-ray machines or tubes:
Machines: _____
Tubes: _____
2. Type of program conducted? (check)
Voluntary _____
Regulatory _____
Combination _____

REGISTRATION

1. How many x-ray machines or tubes currently in use are registered?
Machines: _____
Tubes: _____
2. How many registrations were made during this fiscal year?
Machines: _____
Tubes: _____

INSPECTIONS

1. How many of the x-ray machines currently in use have ever been inspected?
Machines: _____
Tubes: _____
2. How many x-ray machines have been seen and inspected for the first time this fiscal year?
Machines: _____
Tubes: _____

INSPECTIONS (continued)

3. How many of the machines reported in number 2 above have required and received follow-up inspections because of deficiencies, recalls or the like, but not because of routine rescheduling?
Machines: _____
Tubes: _____
4. How many of the x-ray machines currently in use were inspected this fiscal year because of routine or special rescheduling?
Machines: _____
Tubes: _____

COMPLIANCE

1. How many machines or tubes initially inspected this fiscal year did not meet State minimum requirements?
Machines: _____
Tubes: _____
2. How many machines or tubes were brought up to minimum requirements during this fiscal year?
Machines: _____
Tubes: _____
3. How many machines or tubes currently in use initially met minimum State requirements or were brought up to minimum State requirements since beginning of inspection or survey plan?
Machines: _____
Tubes: _____

Agency _____ State _____ June 30, 19 _____

B. MEDICAL X-RAY PROGRAM (All data pertain to jurisdiction of reporting agency.)
(Answers should be stated in machines or tubes; both, if possible.)

GENERAL

Facility	Number of Machines Inspected This Year	Number of diagnostic or therapeutic x-ray machines or tubes in use:	
		Machines	Tubes
1. Hospitals			
2. Public Health Clinics (Run by State or local government for segments of general population.)			
3. Other Health Clinics (Run by private groups, such as factories, in- stitutions, foundations, etc.)			
4. Chest X-ray Trucks (Such as Tuberculosis Association X-ray Trucks)			
5. Private Office Facilities:			
Physicians (M.D.)			
Osteopaths			
Chiropractors			
Veterinarians			
Podiatrists			
Other			
Grand Totals			

Type of program conducted? (check)

Voluntary _____
Regulatory _____
Combination _____

REGISTRATION

- How many x-ray machines currently in use are registered?
Machines _____
Tubes _____
- How many registrations were made during this fiscal year?
Machines _____
Tubes _____

INSPECTIONS

- How many of the x-ray machines currently in use have ever been inspected? Machines _____
Tubes _____
- How many x-ray machines have been seen and inspected for the first time this fiscal year? Machines _____
Tubes _____
- How many of the machines reported in Number 2, above have required and received follow-up inspections because of deficiencies, recalls or the like, but not because of routine rescheduling? Machines _____
Tubes _____
- How many of the x-ray machines currently in use were inspected this fiscal year because of routine or special rescheduling? Machines _____
Tubes _____

COMPLIANCE

- How many machines or tubes initially inspected this fiscal year did not meet State minimum requirements? Machines _____
Tubes _____
- How many machines or tubes were brought up to minimum requirements during this fiscal year? Machines _____
Tubes _____
- How many machines or tubes currently in use initially met minimum State requirements or were brought up to minimum State requirements since beginning of inspection or survey plan? Machines _____
Tubes _____

Agency _____ State _____ June 30, 19 _____

C. INDUSTRIAL X-RAY PROGRAM

GENERAL (Information concerning accelerators should be entered on page 10)

1. Number of users of industrial x-ray equipment in the State or local area:

a. Radiographic _____
 Fluoroscopic _____
 Other _____

b. Analytical x ray (diffraction, spectrographic, etc.) _____

2. Number of industrial x-ray machines in the State or local area:

a. Radiographic _____
 Fluoroscopic _____
 Other _____

b. Analytical x ray (diffraction, spectrographic, etc.) _____

Type of program conducted? (check) Voluntary _____
 Regulatory _____
 Combination _____

REGISTRATION

1. Total current registration:

Machines _____

2. Registrations (initial and/or new) made during this fiscal year:

Machines _____

SURVEYS AND/OR INSPECTIONS

1. Total inspections made during this fiscal year.
 (Count each machine once):

Machines _____

COMPLIANCE

1. Number of machines inspected during this fiscal year which initially did not meet State minimum requirements (count each machine only once):

Machines _____

2. Number of machines brought up to minimum requirements during this fiscal year.

Machines _____

3. Total machines currently in use that meet State minimum requirements (from date inspection or survey plan initiated):

Machines _____

III. PARTICLE ACCELERATOR PROGRAM

GENERAL:

1. Number of users of particle accelerators in the State or local area (by specialty when possible):

TOTAL _____
 Industrial _____
 Processing _____
 Activation Analysis _____
 Other _____
 Nuclear Science _____
 Medical Therapy _____
 Other _____

2. Number of particle accelerators in the State or local area (by type when possible):

TOTAL _____
 Van de Graaff _____
 Neutron Generators _____
 Resonant transformers and insulating core transformers _____
 Linear Accelerators _____
 Cyclotrons _____
 Betatrons _____
 Other _____

3. Type of Program (Check)

Voluntary _____
 Regulatory _____
 Combination _____

REGISTRATION

1. Total current registration (cumulative): _____
2. Registrations (initial and/or new) made during this fiscal year: _____

SURVEY AND/OR INSPECTION PROGRAM

1. Total inspections of accelerators currently in use (cumulative): _____
2. Total inspections made during this fiscal year: _____

COMPLIANCE

1. Number of machines inspected during this fiscal year which initially did not meet State minimum requirements (count each machine only once):
 Machines _____
2. Total machines currently in use that meet State minimum requirements (from date inspection or survey plan initiated):
 Machines _____

ACCIDENTS

1. Number of accidents during this fiscal year involving personnel exposure _____
2. Of these, how many were investigated by the State? _____

DEFINITION OF PARTICLE ACCELERATOR: A device capable of imparting sufficient kinetic energy to charged particles to produce nuclear reactions. Include electron accelerators greater than 0.3 meV and positive ion accelerators greater than 150 keV.

Agency _____ State _____ June 30, 19 _____

VIII. RADIOACTIVE MATERIALS PROGRAM

A. BY-PRODUCT, SOURCE AND SPECIAL NUCLEAR MATERIAL

1. AEC licensed material:
 - a. Number of AEC licenses _____
 - b. Number of joint AEC-State inspections in this fiscal year _____
 - c. Number of State (only) inspections in this fiscal year _____

2. Agreement State licensed material:

- a. Number of agreement licenses for by-product, source and special nuclear material _____
- b. Number of State inspections of by-product, source and special nuclear material _____

B. RADIUM & RADON

Number of Facilities

1. Total number of facilities licensed or registered. (If there is no licensing or registration program, give estimated numbers.)

	Licensed	Registered or known	Estimated
Medical	_____	_____	_____
Industrial	_____	_____	_____
*Other	_____	_____	_____
Total	_____	_____	_____

Inspections

1. Total number of initial and re-inspections made during this fiscal year:

	Initial Inspections	Re-Inspections
Medical	_____	_____
Industrial	_____	_____
*Other	_____	_____
Total	_____	_____

Inspections (cont)

2. Number of follow-up inspections made during the fiscal year to determine if items of non-compliance have been corrected:

Medical	_____
Industrial	_____
*Other	_____
Total	_____

Compliance

1. Number of facilities inspected during this fiscal year which did not meet State minimum requirements

Medical	_____
Industrial	_____
*Other	_____
Total	_____

2. Of the number of facilities shown in Item 1, how many were brought up to minimum requirements during this fiscal year:

	Full Compliance	Partial Compliance
Medical	_____	_____
Industrial	_____	_____
*Other	_____	_____
Total	_____	_____

Incident Investigations

1. How many incidents involving radium or radon were reported during this fiscal year _____
2. How many were investigated by the State during this fiscal year _____

*DEFINITION OF OTHER: Includes educational and any other category not classifiable as medical or industrial.

Agency _____ State _____ June 30, 19 _____

IX. EQUIPMENT (How many of the following types of equipment are available in your agency?)

	<u>Number:</u>	<u>Description of Equipment (Make and Model Number):</u>	<u>Ancillary Equipment:</u>
1. Laboratory Instrumentation:			
a. Internal Proportional Counter	_____	_____	_____
b. Low-Beta Counter	_____	_____	_____
c. Multi-channel Analyzer	_____	_____	_____
d. Single-channel Analyzer	_____	_____	_____
e. Liquid Scintillation Analyzer	_____	_____	_____
f. Thin-window GM Counter	_____	_____	_____
		<u>Description of Equipment (Make and Model Number):</u>	<u>Equipment Available From Other Agencies For Emergency Use:</u>
2. Survey Instruments:			
a. Alpha			
(1) Gas flow	_____	_____	_____
(2) Scintillation	_____	_____	_____
b. Beta-Gamma			
(1) Ion-Chamber	_____	_____	_____
(2) GM Counter	_____	_____	_____
(3) Scintillator	_____	_____	_____
c. Neutron	_____	_____	_____

APPENDIX 1

CATEGORIES OF STATE HEALTH DEPARTMENT PERSONNEL PARTICIPATING IN RADIOLOGICAL HEALTH ACTIVITIES

	CODE
Health Commissioner, Bureau, or Division Chief (Spends less than 50% of time in R.H.)	TPA
Top Program Administrators - Over-all planning or administration of several programs in addition to radiological health.	
Radiological Health Director (Spends at least 50% of time in R.H.)	RHD-1
	RHD-2
	RHD-3
Radiological Health Specialist (Spends at least 50% of time in R.H.)	RHS-1
	RHS-2
	RHS-3
Radiological Health Technician (Spends at least 50% of time in R.H.)	RHT-1
	RHT-2
Supporting Personnel (Spends less than 50% of time in R.H.)	SP-1
	SP-2

Agency _____ State _____ June 30, 19 _____

X. OTHER RADIOLOGICAL HEALTH ACTIVITIES

Include only those activities which cannot be allocated to one of the other program areas of radiological health. Research projects and special studies are examples. Please show any changes which have occurred since last fiscal year.

DEFINITION OF TERMS USED

To insure uniformity and comparability of data collected during the program reviews, certain terms used in the various questionnaires and forms have been defined as shown below. The order in which the definitions are listed is usually determined by the sequence of the terms within the document.

GENERAL:

1. Professional personnel - Staff members who conform to the standards of a position rated as a professional one.
2. Semiprofessional - Technical personnel performing in positions under the supervision of professional staff. (Usually these employees are high school graduates who have had specialized technical courses and/or some college work. Personnel with college degrees who are working in an apprenticeship capacity may still be rated semiprofessional.)
3. Full-time personnel - Employed on a full-time basis and spending all of their working time in radiological health activities.
4. Part-time personnel - Employees who devote a part of an average work day to radiological health. They may be employed by the health agency on either a full- or part-time basis.
5. Full-time equivalent - The fractional part, or percent, of a total man-year devoted to activities in radiological health. (As used on page 3, section III, item B, this will be the total time, in terms of a full-time worker, spent by personnel who devote only a part of their working time to radiological health. For example, 4 people spending 25 percent of their working time in radiological health will be counted as the equivalent of one full-time worker.)
6. Supporting services - All financial support and personnel services contributed from programs other than radiological health. (Salaries, travel, and other expenses paid by other programs should be based on the percent of time the employee spends in radiological health. These expenditures are from funds not counted in the original budget for radiological health.)

DEFINITIONS (cont)

TYPE OF PROGRAM:

1. Voluntary - Participation in any aspect of a radiological health program in which the parties involved exercise the power of free choice.
2. Regulatory - Participation in any aspect of a radiological health program in which the power of free choice has been removed by legal authority.
3. Combination - Participation in a radiological health program in which both voluntary and regulatory programs are utilized.

CONTROLS:

1. Licenses - A permission granted to a user by competent authority to engage in an activity otherwise unlawful.
2. Registration - Identification of radiation producing sources in a system of records submitted to an appropriate governmental authority.

RECIPIENT:

1. User - Organization or institution having administrative control over one or more sources of ionizing radiation.
2. Licensee - A person, firm, or institution that is granted a license.
3. Registrant - A person, firm, organization, or institution responsible for the identification of sources of ionizing radiation.

FIELD WORK:

1. Survey or Inspection - A critical observation of the use and/or examination of a source(s) of ionizing radiation and/or its environs to determine compliance with recommendations or legal standards established by an appropriate authority.

DEFINITIONS (cont)

FIELD WORK (cont):

2. Follow-up Inspection - A return visit to an installation to determine whether recommended corrections have been made.
3. Re-inspection - A complete re-examination of the total problem determined from the initial inspection.
4. Compliance - To conform to recommendations or legal standards.

X-RAY:

1. Machine - An x-ray machine is a piece of equipment containing one or more x-ray tubes and the necessary appurtenances.
2. Industrial Unit - An x-ray unit used to irradiate inanimate objects and is not used in the practice of the healing arts (including inspectoscopes, shoe fitting fluoroscopes).

RADIOACTIVE MATERIALS:

1. By-product Material - Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material...AEC.
2. Source Material - (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of (a) uranium, (b) thorium or (c) any combination thereof. Source material does not include special nuclear material...AEC.

The ABSTRACT CARDS below are designed to facilitate document retrieval using Coordinate Indexing. They provide space for an accession number (to be filled in by the user), suggested key words, bibliographic information, and an abstract.

The Coordinate Index concept of reference material filing is readily adaptable to a variety of filing systems. Coordinate Indexing is described in the publication "IBM Data Processing Techniques - Index Organization for Information Retrieval" (C 20-8062). Copies are available through IBM Branch Offices.

The cards are furnished in triplicate to allow for flexibility in their use (e.g., author card index, accession number card index).

REPORT OF STATE AND LOCAL RADIOLOGICAL
HEALTH PROGRAMS--FISCAL YEAR 1969 -
M. A. Culliton and M. McMahon; August
1970; ORO 70-4; ORO, BRH, EHS, PHS, DHEW.

Accession No.

This report is the ninth of a series based on data collected during fiscal year reviews of 53 State and local radiological health programs. The resources and activities of State and local radiological health programs are presented and summarized from data collected as of June 30, 1969. Summary data are included for fiscal years 1964 through 1969. Resources include data on personnel, funds, and equipment. The program activity

(over)

REPORT OF STATE AND LOCAL RADIOLOGICAL
HEALTH PROGRAMS--FISCAL YEAR 1969 -
M. A. Culliton and M. McMahon; August
1970; ORO 70-4; ORO, BRH, EHS, PHS, DHEW.

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This report is the ninth of a series based on data collected during fiscal year reviews of 53 State and local radiological health programs. The resources and activities of State and local radiological health programs are presented and summarized from data collected as of June 30, 1969. Summary data are included for fiscal years 1964 through 1969. Resources include data on personnel, funds, and equipment. The program activity

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